I. GENERAL FACILITY INFORMATION

NOTE: You are not required to generate new data. Only supply the data that is readily available to you.

I.1 a. Name of facility: Millbury Resource Recovery Facility

b. Address (do not use a P.O. Box):

Street: 331 Southwest Cutoff Road

City: Millbury County:

State: Massachusetts ZIP: 01527

c. Plant latitude and longitude (to the nearest second, only if readily available):

Latitude: Longitude:

If latitude and longitude are unknown, please indicate as specifically as possible where the facility is located (i.e., direction and distance from the nearest intersection of major city streets or State or U.S. highways):

West of Route 122 on Route 20

d. Owner of facility: Wheelabrator Millbury Inc.

e. Operator of facility: Wheelabrator Millbury Inc.

f. Person responsible for completing questionnaire:

Name: David Wojichowski

Title: Project Engineer Phone No. (617) 777-2207

Mailing Address (if different from Question I.1.b, above):

Street: 55 Ferncroft Road

City: Danvers State: MA ZIP: 01923

I.2 Number of combustor units at facility (both operating and non-operating) by fuel and combustor type:

a. Mass burn

__2__ Field-erected, moving grate stoker (often called mass burn combustor)

_____ Rotary combustor

_____ Modular, starved air

_____ Modular, excess air

_____ Other, (please specify): _____

b. RDF

_____ Spreader stoker

_____ Other, (please specify): _____

c. Co-fired

_____ Coal

_____ Sewage sludge

_____ Wood chips

_____ Other, (please specify): _____

I.3 What is the facility's current operating schedule?

a. Number of hours/day: __24__

b. Number of days/week: __7__

I.4 a. Surrounding land use:

__X__ Industrial __X__ Commercial __X__ Residential ____ Rural

____ Other (specify): _____

b. Enclose a scaled plan view of the facility, labelled with combustor unit identification number(s) and showing the location of the waste receiving and holding facilities, incinerator(s), air pollution control device(s), and residue handling and storage facilities. The diagram should also show the overall dimensions of the site, distances between buildings, and from buildings to property boundaries. Also indicate on the diagram other installations such as parking lots, roads, rail lines, overhead structures (powerlines), underground structures (power cables, water lines), sewers, etc., which might restrict modification of the combustor or addition of air pollution control equipment. (If drawings are unavailable, please contact Mr. Ron Myers at (919) 541-5407.)

I.5 Operator Training

a. Is operator training required by a local or State agency as a condition of plant operation? X Yes ____ No
If yes, please name the agency(s): Massachusetts Department of Environmental Quality Engineering

b. How many hours of formal training are conducted in each of the following areas?

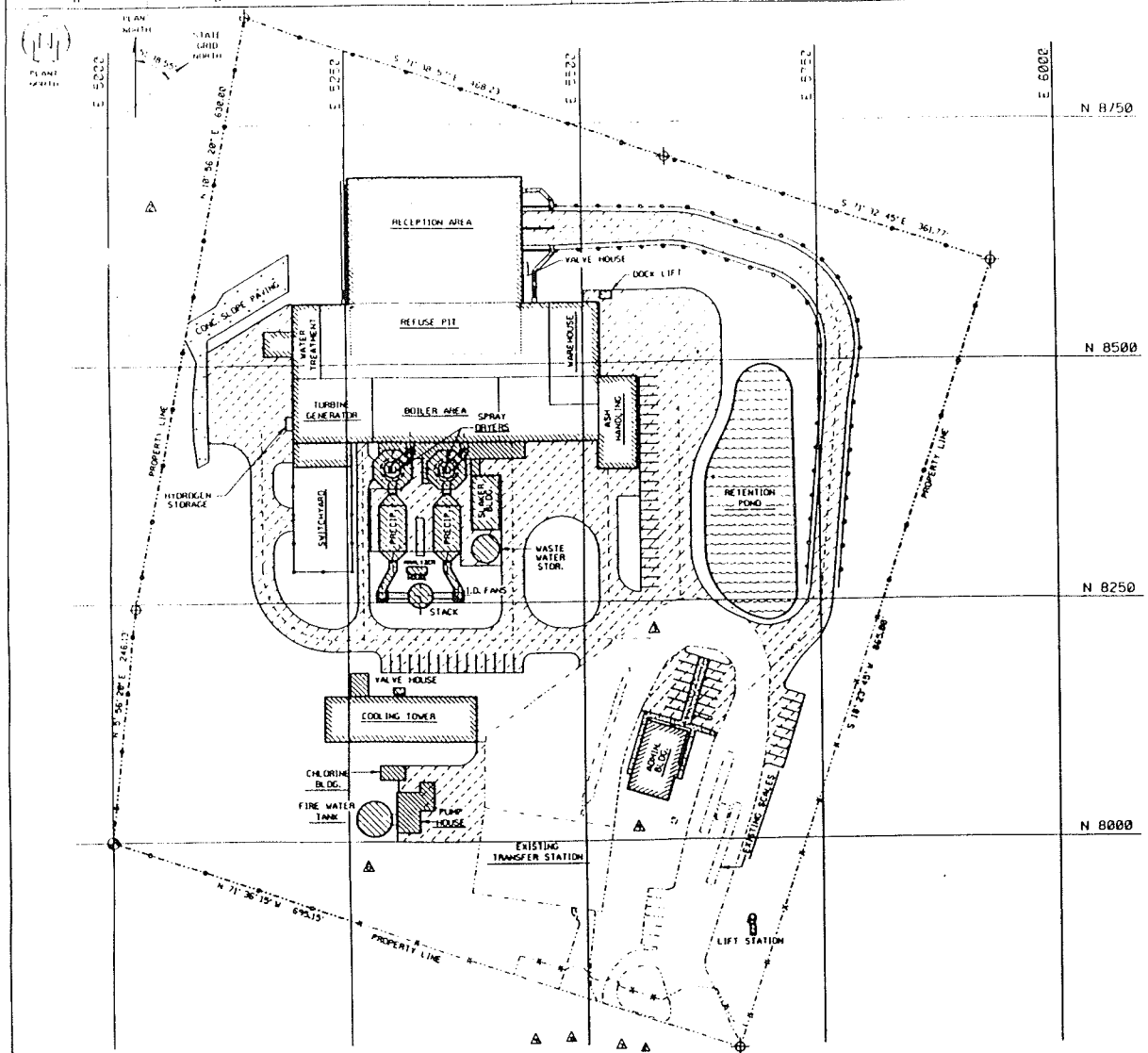
	Prior to Starting Work	During First Year of Employment	After First Year of Employment
MSW handling			
Combustor operation			
Air pollution control devices			
Residue handling			
Other (specify):			

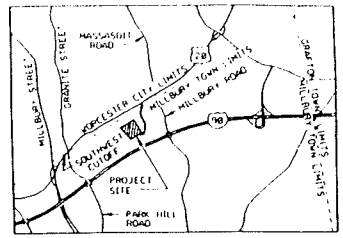
c. Who conducts the training?

X In-house personnel X Private contractor

____ State or local agency

X Other (specify): Equipment Supplies





VICINITY MAP
SCALE: 1" = 2760'

LEGEND

- PROPOSED FACILITIES
- EXISTING FACILITIES
- BITUMINOUS PAVING
- NEW SECURITY FENCE
- EXISTING FENCE
- STEEL BEAM GUARDRAIL
- PROPERTY CORNER
- CONCRETE BARRIER

NOTES

1. PLANT NORTH FOR THIS PROJECT IS ORIENTED 51°38'55" COUNTER-CLOCKWISE FROM STATE OF MASSACHUSETTS GRID NORTH. SOUTHWEST PROPERTY CORNER HAS BEEN ESTABLISHED AS PLANT COORDINATE NORTH 8000.00 AND EAST 5000.00 WHICH IS EQUIVALENT TO STATE GRID COORDINATE NORTH 444,505.86 AND EAST 527,466.83. ALL BEARINGS SHOWN ARE IN RELATION TO PLANT NORTH.

6	V.S.R. 9-5-86
5	V.S.R. 6-17-86
4	D.R.H. 4-9-86
3	C.A.H. 12-4-85
2	C.A.H. 10-31-85
1	GENERAL REVISION

RELEASED FOR CONSTRUCTION
BY C.A.HASSON DATE 9-23-85

6	GENERAL REVISION	L.W.J.	K.F.J.	9-18-86
5	GENERAL REVISION	L.W.J.	K.F.J.	6-6-86
4	REV. CHLORINE BLDG., FIRE WATER TANK AND PUMP HOUSE	J.R.F.	K.F.J.	12-3-85
3	ADD HOLD & ADD VICINITY MAP	J.R.F.	K.F.J.	12-2-85
2	REMOVE TANKS & REV. ASH HANDLING	J.R.F.	K.F.J.	10-31-85
1	GENERAL REVISION	J.R.F.	K.F.J.	9-20-85

SIGNAL ENVIRONMENTAL SYSTEMS INC.
Hampton, New Hampshire

RUST International Corporation, Birmingham, Alabama
Contract 21-2743

PLOT PLAN

SIGNAL ENVIRONMENTAL SYSTEMS INC.
MILLBURY RESOURCE RECOVERY FACILITY
MILLBURY, MASSACHUSETTS

DRAWING NUMBER 01-32-001

SHEET 5

II. WASTE CHARACTERIZATION

NOTE: You are not required to generate new data. Only supply the data that is readily available to you.

II.1 Tonnage of waste received during each month in 1987:

1987

Jan	-	July	-
Feb	-	Aug	-
Mar	-	Sept	-
April	-	Oct	21788
May	-	Nov	41059
June	-	Dec	36685

II.2 Percentage breakdown of wastes combusted by type:

Source	Avg. percent	Range percent
Residential	80	_____ - _____
Commercial	20	_____ - _____
Industrial	_____	_____ - _____
Other (specify below, e.g., from military installations, hospitals, government research facilities, industrial plants)	_____	_____ - _____

_____

_____

_____

II.3 Is there a municipal recycling program? X Yes ____ No ____ Unknown

a. If yes, what is recycled? (Please check)

____ Newspapers X Bottles ____ Aluminum cans

____ Other (specify) State Bottle Bill

b. What percentage of your residential waste is collected in the area with the recycling program? _____

c. If possible, estimate the proportion of discards recycled.

____ Newspapers ____ Bottles ____ Aluminum cans

____ Other (specify) _____

II.4 Describe any waste processing that occurs at your facility or other processing facilities before the waste is burned:

a. Are combustibles removed?

____ Paper/Cardboard ____ Plastics X None

____ Bulky/Oversize Waste

____ Other (specify) _____

b. Are noncombustibles removed?

____ Glass X (Large Pieces) Metals ____ Batteries _X_ None

____ Bulky/Oversize Waste

____ Other (specify) _____

c. What, if any, additional processing occurs?

____ Shredding ____ Baling ____ Pelletizing _X_ None

____ Other (specify) _____

_____

d. What percent of the total tonnage of waste received by your facility is typically segregated and disposed of by means other than combustion? less than 1%

II.5 a. What is the capacity of your waste facility storage area?

6700 tons

b. Are separate piles of wet and dry garbage maintained?

_____ Yes X No

II.6 a. Do you fire refuse derived fuel (RDF)? ____ Yes __X__ No

If yes, please provide the following information:

b. What is the nominal size range of the as-fired RDF, in inches?
Minimum: _____ Maximum: _____

c. What percent by weight of the total municipal solid waste collected is removed during RDF processing? _____

d. What percent of the total heat content of the municipal solid waste collected is removed during RDF processing? _____

e. What is the percent ash content of the as-fired RDF? _____

f. What is the average heating value of the as-fired RDF, Btu/lb? _____ (Is this value measured ___ or estimated ___)

II.7 a. Is MSW co-fired with another fuel (excluding startup and shutdown)? ____ Yes __X__ No

If yes, please provide the following information:

b. Type of fuel co-fired:

____ Wood ____ Coal ____ Sewage sludge ____ Natural gas

____ Oil _____ Other (specify): _____

c. Is the co-fired fuel fired:

____ As a standby fuel when MSW supply is inadequate

____ Routinely

____ Other (specify): _____

d. What percent of the total fuel fired is co-fired fuel?

	On a weight basis	On a heat input basis
Annual average	_____	_____
Daily minimum	_____	_____
Daily maximum	_____	_____

e. Is co-fired fuel added to the combustor through a separate feed system from the MSW feed?

_____ Yes _____ No

If yes, how is the co-fired fuel added?

_____ Spreader stoker

_____ Directly on moving grate

_____ Suspension (e.g., pulverized coal or natural gas)

_____ Other (please specify): _____

III. COMBUSTOR DESIGN AND OPERATION INFORMATION

NOTE: You are not required to generate new data. Only supply the data that is readily available to you. Complete Section III for each municipal waste combustor at the facility. If all the combustors are identical, complete one response. If combustors are not identical, please make the appropriate number of copies of Section III before answering.

III.1 Unit number (or numbers, if this response covers multiple units). Number(s) should correspond to those shown on the diagram referenced in I.4.c.: 1 and 2

III.2 Combustor Design

a. Design feed rate of unit (short tons of waste/day): 750 tpd/Unit

b. Minimum operating rate (as percent of design feed rate): 66%

c. For single stage combustor:

1. Combustor gas temperature at inlet to first convective section, °F: _____

2. Combustor gas residence time at or above temperature in III.2.c.1, seconds: _____

d. For multiple stage combustor:

1. Combustor gas temperature at exit of primary chamber, °F: _____

2. Combustor gas temperature at exit of secondary chamber, °F: _____

e. Does the unit have heat recovery? X Yes ____ No If yes, what is the design thermal capacity in million Btu/hour: or thousand pounds of steam/hour: 190

f. Number of hours combustor(s) operated in 1987: _____

g. Tonnage of waste burned in 1987: 99,500 (facility)

III.3 a. Year of unit startup: 1987

b. Year of most recent major renovation, if any: _____

c. Have any major modifications been made to the combustor since startup? ____ Yes X No
If yes, please describe on the back side of this page.

III.4 a. Combustor manufacturer/designer: Babcock & Wilcox

b. Grate manufacturer/designer: Von Roll

c. Combustion control system manufacturer/designer: Bailey

d. Waste heat boiler manufacturer/designer, if applicable:

e. Who was responsible for integrating the system components?

Rust Engineering/Wheelabrator Environmental Systems

III.5 Enclose current blueprints or scaled drawings of the combustor identifying the following information:

a. Dimensions of combustion chambers (height, width, and depth).

b. Direction of air flow.

c. Dimensions of furnace throat.

d. Locations of plenums, overfire air ports, and fans.

e. Locations of temperature, pressure, and flow sampling points.

f. Grate sections and dimensions.

(If drawings are unavailable, please call Mr. Ron Myers at (919) 541-5407.)

III.6 Waste Feed System

a. _X_ Ram ____ Conveyor ____ Spreader ____ Gravity

____ Other (please specify) _____

b. Automatic _X_ Manual ____ Other (specify) _____

c. What parameter controls MSW feed rate?

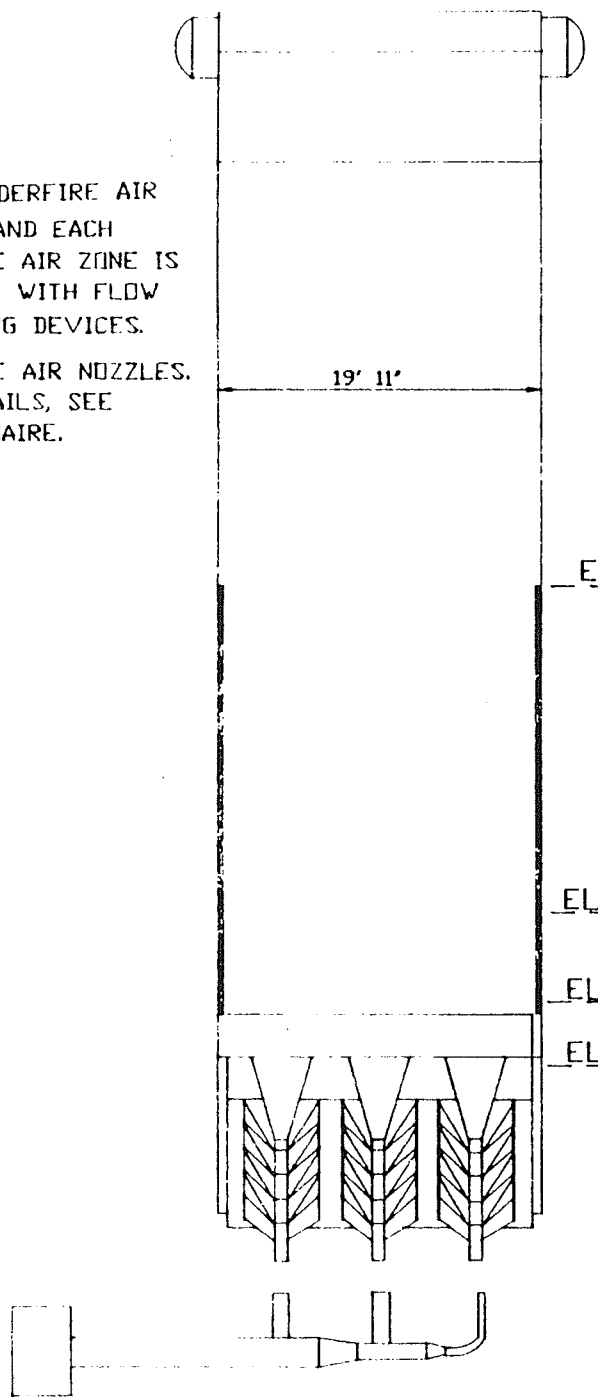
_X_ Steam demand _____ Furnace exit temperature

_____ Other,(please specify): _____

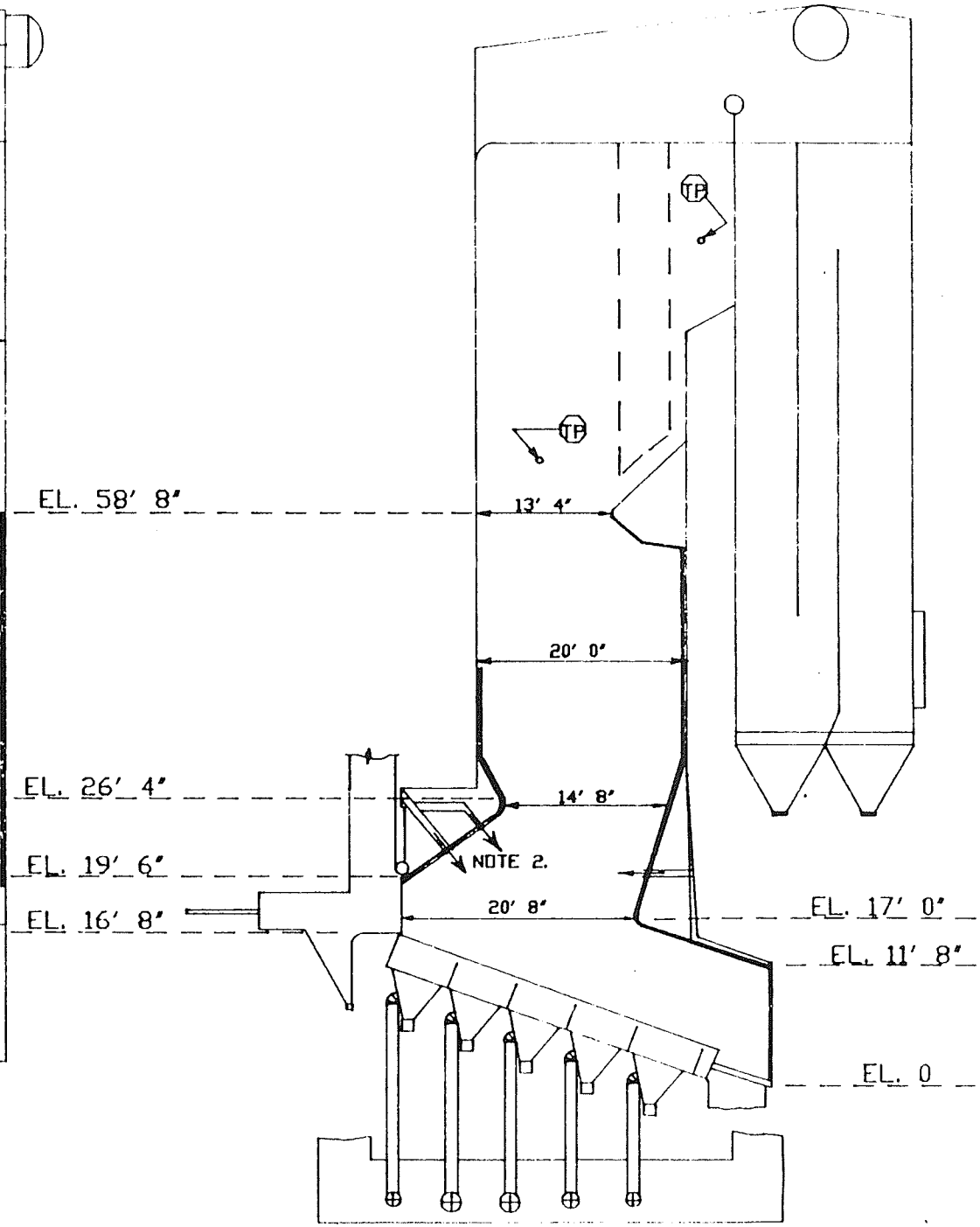
WES 750 TPD REFUSE COMBUSTION SYSTEM

NOTES:

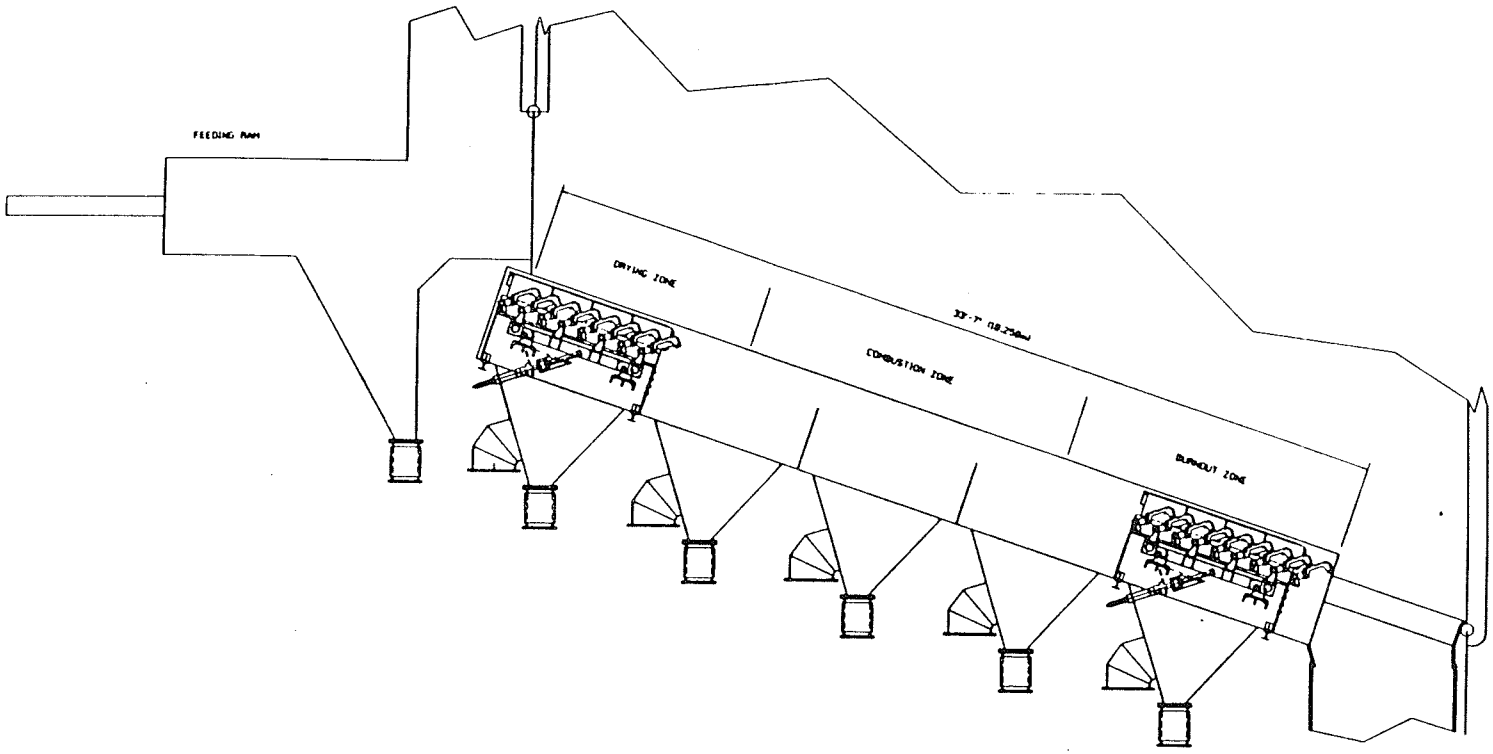
1. EACH UNDERFIRE AIR PLENUM AND EACH OVERFIRE AIR ZONE IS EQUIPPED WITH FLOW MEASURING DEVICES.
2. OVERFIRE AIR NOZZLES. FOR DETAILS, SEE QUESTIONAIRE.



FRONT VIEW



SIDE VIEW



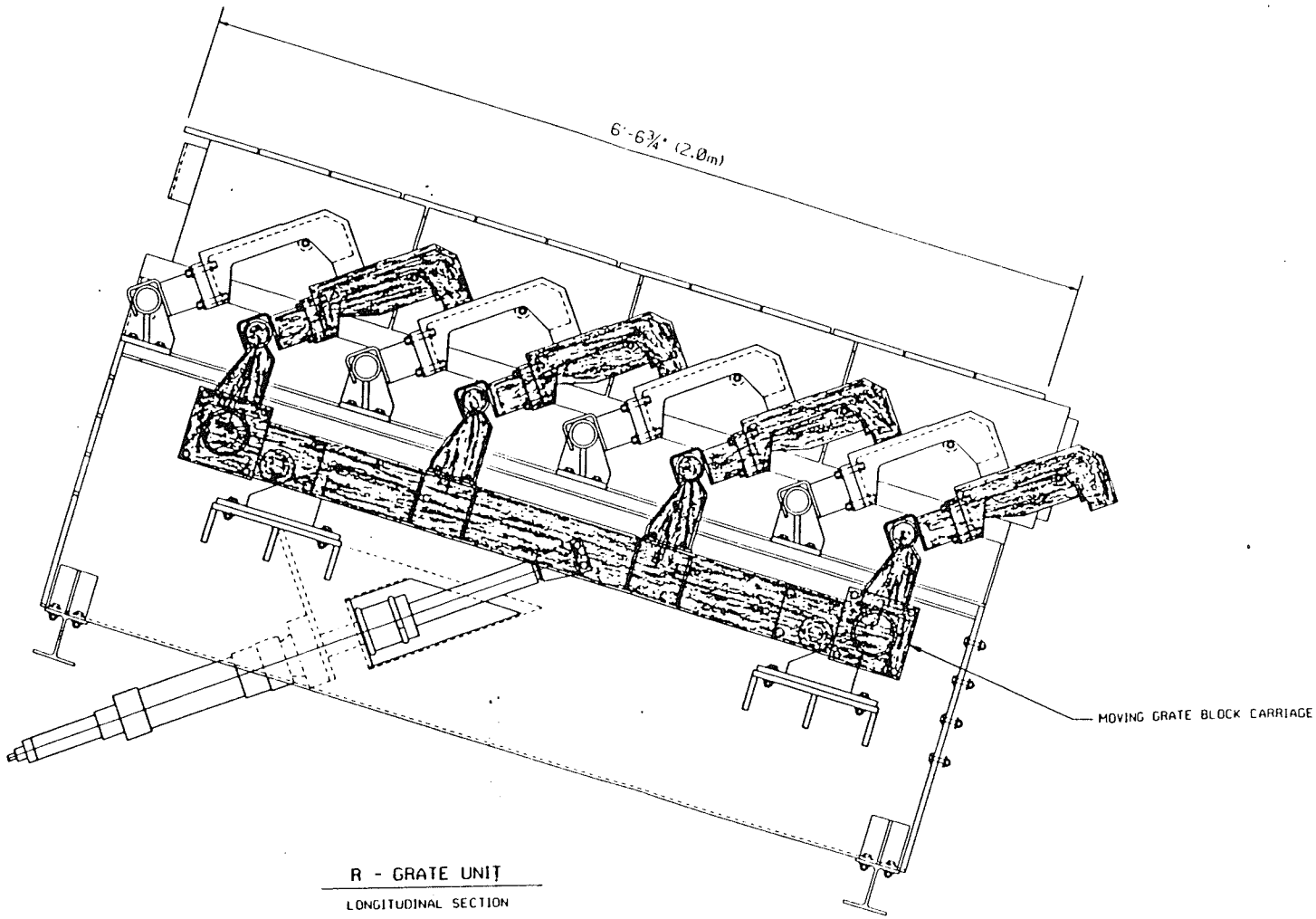
GRATE TYPE R-10078

LONGITUDINAL SECTION

GRATE - LONGITUDINAL SECTION

SIGNAL ENVIRONMENTAL SYSTEMS INC.

RUST



R - GRATE UNIT

LONGITUDINAL SECTION

SIGNAL ENVIRONMENTAL SYSTEMS INC.

R - GRATE UNIT

SES 750 TPD
REFUSE COMBUSTION UNIT

SK-002

B

III.7 Grate Design

a. Number of underfire air plenums: 15

b. Pressure differential at full load between each underfire air plenum and furnace, inches of water:

Plenum 1 12-13 Plenum 4 12-13

Plenum 2 12-13 Plenum 5 12-13

Plenum 3 12-13 Plenum 6 _____

III.8 Air Distribution

Answer question "a" if your combustor has a single combustion chamber (typical of most field-erected units). Answer question "b" if your combustor has two or more combustion chambers (typically found on modular units).

a. Combustors with a Single Combustion Chamber

1. For typical fuel quality, what is the underfire (i.e., undergrate) air rate as a percent of total air flow to the combustor:

At full load 40-50%

At minimum operating load 40-50%

Do you adjust underfire air for changes in moisture content in the waste fuel? X Yes ____ No If yes, please describe adjustments made on the back of this page.

2. For typical fuel quality, what is the percent O_2 in the combustor exhaust gas, dry basis:

At full load 8-10%

At minimum operating load _____

Do you adjust combustor gas O_2 content for changes in moisture content in the waste feed? ____ Yes X No If yes, please describe adjustments made on the back of this page.

NOTE: If detailed drawings are available for questions 3, 4, and 6 below, it is acceptable to provide these drawings in lieu of filling in the blanks we have provided.

3. How many rows of overfire air jets are located in the primary combustor? 3 (2 Front - 1 Rear)

4. Do the rows of overfire air jets on opposing walls form?

   X Opposed jets ____ Interlaced jets

   ____ Other (specify): _____

5. For each row of overfire air jets, what is the pressure drop between header and furnace (inches of water)?

OFA Row	Full Load	Minimum Load
1	NA	
2		
3		
4		
5		

6. For each row of overfire air jets, what is the number and diameter of jets and the angle of inclination from horizontal in degrees (use + degrees to represent upward and - to represent downward from horizontal):

OFA Row	No. of Jets	Diameter	Angle of Inclination
1	(Front) 23	4"	-30 degrees
2	(Rear) 15	4"	0 degrees
3			
4			
5			

b. Combustors with Two or More Combustion Chambers:

1. Flue gas residence time in each chamber, in seconds:

	Design	Average
First chamber	_____	_____
Second chamber	_____	_____
Third chamber	_____	_____

2. For typical fuel quality, what is the percent of total air flow fed to first chamber:

At full load _____

At minimum operating load _____

Do you adjust underfire air for changes in moisture content in the waste feed? ____ Yes ____ No If yes, please describe adjustments made on the back of this page.

3. Supplemental fuel use (e.g., oil or natural gas) in the secondary or tertiary combustion chambers as a percent of total Btu input to the combustor during normal operation (enter zero if no supplemental fuel is used): _____

4. For typical fuel quality, what is the percent O_2 in the combustor exhaust gas, dry basis:

At full load _____

At minimum operating load _____

Do you adjust combustor gas O_2 content for changes in moisture content in the waste feed? Yes ____ No ____ If yes, please describe adjustments made on the back of this page.

III.9 Air Preheat

a. Does the facility have air preheat? X Yes ____ No

If yes, please answer the following questions:

1. Is air preheated by: ___ Hot flue gas X Steam

____ Other (please specify): _____

2. Is preheated air used for:

____ Underfire air to the drying gate only

__X__ Underfire air to all grates

____ Both underfire air and overfire air

____ Other (please specify): _____

3. When is preheat used?

__X__ When firing wet waste only (primarily)

____ When firing all wastes

____ Other mode of operation (please specify): _____

_____

_____

III.10 Auxiliary Burners

a. What type of auxiliary fuel is used?

__X__ Gas _____ Oil _____ None

_____ Other (please specify): _____

b. What percentage of total furnace load can be carried by auxiliary burners:

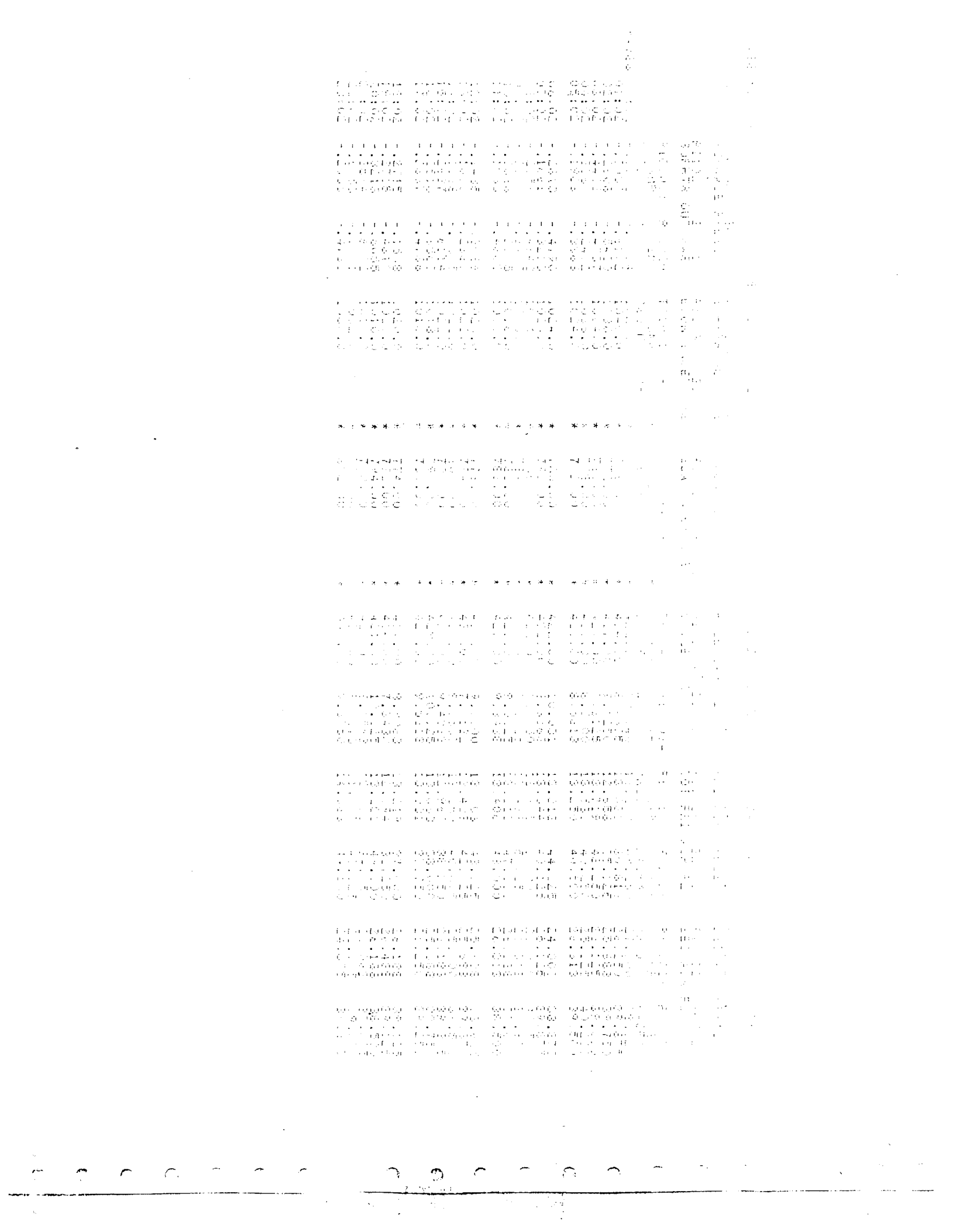
For short duration? 40%

For long-term continuous operation? 40%

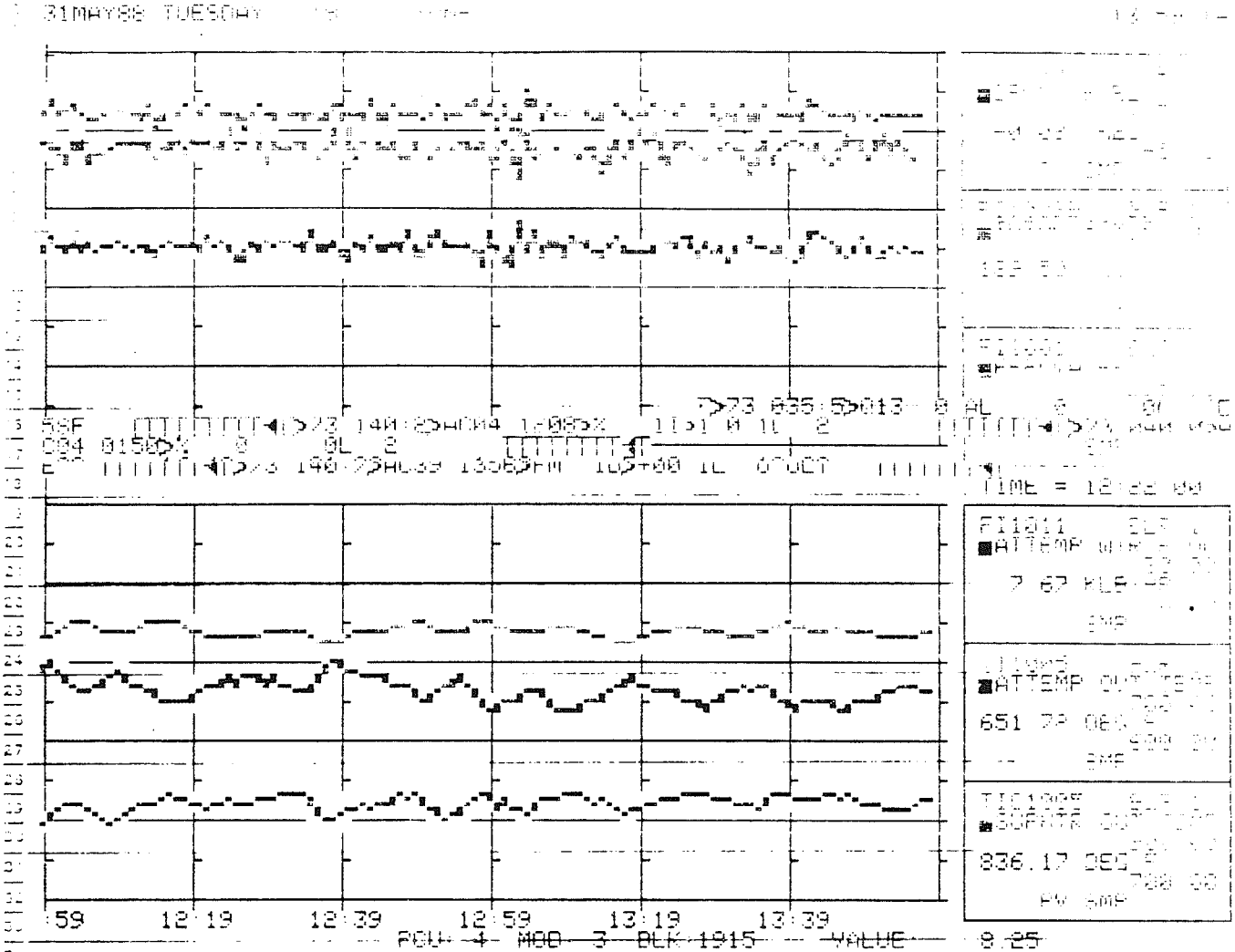
c. If furnace is not already equipped with auxiliary burners, describe on the back side of this page any spatial constraints on the outside of the furnace that would limit addition of auxiliary burners.

III.11 Operation

Please provide a copy of the combustor operating log from a typical operating day. The log should show all temperature and other readings routinely collected.



[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	*	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
01:02	191.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
02:02	189.50	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	*	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
03:02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
04:02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	*	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
05:02	191.00	172.00	[illegible]	[illegible]	[illegible]	[illegible]	*	[illegible]	[illegible]	[illegible]	[illegible]	0.0000
06:02	189.50	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	*	[illegible]	[illegible]	654.00	189.00	[illegible]
07:02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	*	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	*	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	*	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	*	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	*	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	*	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	*	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	*	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	187.50	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	*	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19:02	190.50	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	*	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20:02	188.00	160.50	[illegible]	[illegible]	[illegible]	[illegible]	*	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	*	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	*	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23:02	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]


31MAY88 TUESDAY
TIME = 12:22 PM
12:19
12:39
12:59
13:19
13:39
POU 4 MOD 3 BLK 1915 VALUE
8.25

14112 G.B.

III.12 Combustor Control System

a. For each of the control parameters listed below, please indicate whether the control system is manual or automatic.

Control Parameter	Control Mode: Manual	Control Mode: Automatic	Not Controlled
Steam Production		X	
CO in Flue Gas	X		
O_2 in Flue Gas		X	
Fuel Burnout on Grate	X		
Furnace Exit Temperature (i.e., gas temperature at superheater or quench reactor inlet)			X
Combustor Exit Temperature (i.e., gas temperature at economizer or quench reactor outlet)			X
Other control parameters, (please specify):			

b. For each of the control parameters identified in III.11.a, what steps are taken if operation begins to deviate from the desired set points?

- Steam Production

  Set point: 190,000 lbs/hr Acceptable range: +/- 5,000 lbs/hr

  Automatic or manual steps taken to correct deviation:

  Air adjustments, grate adjustments, ram feed adjustments, as necessary

- CO in Flue Gas

  Set point: NA Acceptable range: Within Limit

  Automatic or manual steps taken to correct deviation:

  Manual - Adjustments to ram and grate speed or air flow

- O_2 in Flue Gas

  Set point: 10 (wet) Acceptable range: 9-12

  Automatic or manual steps taken to correct deviation:

- Fuel Burnout on Grate

  Set point: NA Acceptable range: _____

  Automatic or manual steps taken to correct deviation:

  Air adjustments, grate adjustments and occasionally ram feeder adjustments per visual inspection.

- Furnace Exit Temperature (i.e., flue gas temperature at superheater or quench reactor inlet)

  Set point: _____ Acceptable range: _____

  Automatic or manual steps taken to correct deviation:

- Combustor Exit Temperature (i.e., flue gas temperature at economizer or quench reactor outlet)

  Set point: _____ Acceptable range: 400-550

  Automatic or manual steps taken to correct deviation:

  Boiler is scheduled for cleaning when economizer exit temperature approaches the high end of the range.

- Other Control Parameters Listed in III.12.a. (please specify): Furnace Pressure

  Set point: -0.2 H20 Acceptable range: +/- 0.1" H20

  Automatic or manual steps taken to correct deviation:

  ID Fan speed

III.13 Soot Removal

a. What type of convective section soot control system do you have?

__X__ Rapping __X__ Blowing

_____ Other (please describe): _____

b. How is the soot blowing system operated?

__X__ Fixed time intervals _____ Based on steam production

_____ Other (please specify): _____ _____

c. Approximate frequency of soot blowing, in hours: 24 hours / 8 lances

d. Approximate duration of soot blowing, in minutes: 4 min/lance

III.14 Startup and Shutdown

a. How many times was the combustor started in 1987? _____

b. Is auxiliary fuel used during startup? __X__ Yes ____ No

Is auxilliary fuel used during shutdown? __X__ Yes ____ No

c. Are there requirements to attain a specific temperature during startup prior to initiating refuse feed? __X__ Yes ____ No

If yes, what is that temperature? 1500 (1 sec) ^{o}F

Where is it measured? Superheater Exit Surrogate Method

d. Are there requirements to maintain a specific temperature during shutdown until waste is burned off the grate? __X__ Yes ____ No

If yes, what is that temperature? 1500 (1 sec) ^{o}F

Where is it measured? Superheater Exit Surrogate Method

e. Please list each scheduled outages planned for 1988 of more than 2 weeks duration.

Reason	Duration (in days)
None	

f. Please attach a copy of normal startup and shutdown procedures.

IV. AIR POLLUTION CONTROL DEVICES

NOTE: You are not required to generate new data. Only supply the data that is readily available to you. Complete Section IV for each combustor. If the air pollution control systems on several combustors are identical, complete one response indicating the combustor numbers to which it applies. If the air pollution control systems are not identical, please make the appropriate number of copies of Section IV before entering responses.

IV.1 a. Combustor Unit Number(s) controlled by this system: 1

b. Identify and number (in ascending order from the combustor outlet to the stack) the components of the air pollution control system (APCS). (For example, if the cyclone were the closest component to the furnace, it would be given a "1", and so on.):

___ Cyclone 2 ESP ___ Fabric Filter ___ Venturi Scrubber

___ Wet Scrubber 1 Spray Dryer ___ Dry Sorbent Injection

___ Quench Tower (for temperature control)

___ Other (please specify): _____

___ None

c. Percent of flue gas through APCS: 100%

IV.2 Total duct length from the incinerator outlet to the inlet to existing particulate control devices: 50 feet

IV.3 Electrostatic Precipitator (ESP)

If the unit has an ESP, please provide the following information:

a. Manufacturer: Wheelabrator Air Pollution Control Systems

b. Year installed: 1987

c. Design particulate removal efficiency (as percent of inlet mass loading): 99.5%

d. Total ESP collection area: 72,576 square feet

e. Design flue gas flow rate: 220,000 acfm

f. Design flue gas temperature: 500 ^{o}F

g. Maximum flue gas temperature: 500 ^{o}F

h. Minimum flue gas temperature: 250 ^{o}F

i. Design superficial gas velocity, ft/second: 3.6

j. Provide a plan view of the ESP (with dimensions) showing each physically separated section and identifying the sections energized by each transformer/rectifier set. Indicate the direction of gas flow.

k. Number of fields: 3

Field No.	1	2	3	4
l. Secondary voltages per field, kVDC:	55	55	55	
m. Secondary currents per field, ADC:	1.0	1.0	1.0	

n. Are fields electrified in parallel? X in series? ____

o. Does the ESP have self-leveling spark rate control?
X Yes ____ No

p. What criteria are used to trigger wire replacement?

N/A

q. Typical Flue Gas Characteristics:

- Typical operating inlet and outlet particulate matter concentrations and opacity. Please report all concentrations in gr/dscf at 12 percent CO_2.

Inlet	Outlet	Opacity
		1%

- Typical operating inlet gas temperature, ^{o}F: 250-255
- Typical operating outlet gas temperature, ^{o}F: 250-255
- Acid dew point of inlet gas, ^{o}F: ____
- Percent moisture in inlet gas: ____

IV.4 Wet Scrubber

If unit has a scrubber for particulate control only, please provide the following information:

a. Manufacturer: _____

b. Year installed: _____

c. Design particulate removal efficiency (as of percent inlet mass loading): _____

d. Type: _____ Fixed-throat venturi _____ Variable-throat venturi

_____ Other (please specify): _____

e. Design flue gas flow rate: _____ acfm

f. Design flue gas temperature: _____ ^{o}F

g. Liquid to gas ratio, gal/10^3 acfm: _____

h. Mist eliminator type: ____ Chevron ____ Mesh pad ____ Cyclone

____ Tray type ____ Other,(please specify):

_____

i. Mist eliminator pressure drop, inches water: _____

j. Scrubber pressure drop, inches water: _____

k. Typical Flue Gas Characteristics:

- Typical operating inlet and outlet particulate matter concentrations and opacity. Please report all concentrations in gr/dscf at 12 percent CO_2.

Inlet	Outlet	Opacity
_____	_____	_____

- Typical operating inlet gas temperature, ^{o}F: _____
- Typical operating outlet gas temperature, ^{o}F: _____
- Acid dew point of inlet gas, ^{o}F: _____
- Percent moisture in inlet gas: _____
- Percent moisture in outlet gas: _____

IV.5 Fabric Filter

If the unit has a fabric filtration device, provide the following information:

a. Manufacturer: _____

b. Year installed: _____

c. Design particulate removal efficiency (as percent of inlet mass loading): _____

d. Number of compartments: _____

e. Number of bags per compartment: _____

f. Total bag area, square feet: _____

g. Design flue gas flow rate: _____ acfm

h. Design flue gas temperature: _____ ^{o}F

i. Maximum operating temperature: _____ ^{o}F

j. Minimum operating temperature: _____ ^{o}F

k. Bag material and coating: _____

l. Bag cleaning method: ___ Shake ___ Reverse air ___ Pulse jet

m. Pressure drop across fabric filter, inches water: _____

n. Typical bag life, months: _____

o. Typical Flue Gas Characteristics:

- Typical operating inlet and outlet particulate matter concentrations and opacity. Please report all concentrations in gr/dscf at 12 percent CO_2.

Inlet	Outlet	Opacity
_____	_____	_____

- Typical operating inlet gas temperature, ^{o}F: _____
- Typical operating outlet gas temperature, ^{o}F: _____
- Acid dew point of inlet gas, ^{o}F: _____
- Percent moisture in inlet gas: _____

V. EMISSIONS DATA

NOTE: You are not required to generate new data. Only supply the data that is readily available to you. Complete Section V for each combustor. If the emissions data for several combustors are identical, complete one response indicating the combustor numbers to which it applies. If the emissions data are not identical, please make the appropriate number of copies of Section V before entering responses.

V.1 Combustor Unit Number(s) covered: 1 and 2

V.2 What are the permitted emission limits for the following pollutants?

Pollutant	No Limit	Limit as Expressed in Permit (Include Unit of Measure)
Particulate	____	0.03 gr/dscf @12%CO2
HCl	____	50 ppmdv @12%CO2, or 90% removal
SO_2	____	0.21 lb/mmBtu
CO	____	0.088 lb/mmBtu
Pb	____	0.0025 lb/mmBtu
As	X	____
Cd	X	____
Hg	____	9.2 E-4 lb/mmBtu
Total Dioxins & Furans	____	a) 1.1 pg/m^3 (ambient GLC)(Particulat b) 2.2 pg/m^3 (ambient GLC) (Gaseous)
2,3,7,8-Tetrachloro-dibenzo-p-dioxin	X	____
2,3,7,8-Tetrachloro-dibenzofuran	X	____
Other (specify):		
NOx	____	0.59 lb/mmBtu
Be	____	1.4 E-6 lb/mmBtu
HF		0.016 lb/mmBtu
H2SO4		0.045 lb/mmBtu

V.3 Does the unit have continuous emission monitors? X Yes ___ No

If yes, please list the pollutants monitored and indicate the typical range and average concentrations measured. Please show concentration units: Actual, Uncorrected

Pollutant	Minimum	Maximum	Average
CO	0	200	30
SO2 Inlet	0	500	200
SO2 Outlet	0	250	30
NOx	0	500	180
Opacity	0	100%	1-5%

V.4 For pollutants listed in V.2, please attach the most recent summary reports that document results of emission tests conducted at your facility, including those tests performed for purposes of demonstrating compliance with State or local permits or to fulfill contractual requirements for acceptance of equipment.

V.5 Provide the following information on the unit stack:

a. Is the stack: ___ unique to this combustor or X shared with other units.
If shared, what are the unit numbers of the other combustors: #1 and #2.

b. Stack height, ft: 365

c. Diameter, ft: 10' ID

d. Flue gas temperature at stack exit, ^{o}F: 230-250

TABLE 2-1

UNIT NO. 1 COMPLIANCE EMISSIONS AND CONTROL EQUIPMENT EFFICIENCIES SUMMARY

	Repetition 1	Repetition 2	Repetition 3	Average	Permit Compliance Emissions Limits
SDA Inlet					
Emission Rate, lbs/MMBtu					
Hydrogen Chloride	1.17	0.962	1.06	1.06	NA
Sulfur Dioxide	0.334	0.665	0.494	0.498	NA
ESP Outlet					
Emission Rate, lbs/MMBtu					
Beryllium	< 3.72E-07	< 4.14E-07	< 3.84E-07	< 3.90E-07	1.4E-06
Carbon Monoxide	0.0109	0.0173	0.0113	0.0132	0.088
Hydrogen Chloride	0.0106	0.0432	0.0428	0.0322	NA
Hydrogen Fluoride	< 0.000529	0.001717	0.000601	< 0.000949	0.016
Lead	2.11E-04	3.11E-04	2.39E-04	2.53E-04	2.5E-03
Mercury	2.30E-03	1.12E-03	9.47E-04	1.45E-03	9.2E-04
Nitrogen Oxides	0.370	0.426	0.424	0.407	0.59
Sulfur Dioxide	0.111	0.182	0.0999	0.131	0.21
Sulfuric Acid Mist	0.0190	0.00853	0.00973	0.0124	0.045
Concen., ppmvd @ 12% CO_2					
Hydrogen Chloride	7.4	30.4	30.3	22.7	50
Concen., gr/DSCF @ 12% CO_2					
Particulate (Nonsoot Blow)	0.00260	0.00138	0.00153	0.00184	0.03
Control Equip. Eff., %*					
Hydrogen Chloride	99.09	95.51	95.96	96.85	NA
Sulfur Dioxide	66.77	72.63	79.78	73.06	NA

* Calculated using emission rate, lbs/MMBtu

TABLE 2-2

UNIT NO. 2 COMPLIANCE EMISSIONS

AND CONTROL EQUIPMENT EFFICIENCIES SUMMARY

	Repetition 1	Repetition 2	Repetition 3	Average	Permit Compliance Emissions Limits
SDA Inlet					
Emission Rate, lbs/MMBtu					
Hydrogen Chloride	1.10	0.971	0.818	0.962	NA
Sulfur Dioxide	0.772	0.616	0.763	0.717	NA
ESP Outlet					
Emission Rate, lbs/MMBtu					
Beryllium	< 4.27E-07	< 4.03E-07	< 3.87E-07	< 4.06E-07	1.4E-06
Carbon Monoxide	0.0132	0.0133	0.0155	0.0140	0.088
Hydrogen Chloride	0.0134	0.00607	0.00567	0.00838	NA
Hydrogen Fluoride	0.00218	0.00110	< 0.000501	< 0.00126	0.016
Lead	6.51E-04	1.32E-04	1.21E-04	3.01E-04	2.5E-03
Mercury	8.63E-04	8.27E-04	9.20E-04	8.70E-04	9.2E-04
Nitrogen Oxides	0.329	0.435	0.413	0.392	0.59
Sulfur Dioxide	0.143	0.126	0.178	0.149	0.21
Sulfuric Acid Mist	0.0191	0.00576	0.0115	0.0121	0.045
Concen., ppmvd @ 12% CO_2					
Hydrogen Chloride	9.2	4.2	4.0	5.8	50
Concen., gr/DSCF @ 12% CO_2					
Particulate	0.0194	0.00292	0.00250	0.00827	0.03
Control Equip. Eff., %*					
Hydrogen Chloride	98.78	99.38	99.31	99.16	NA
Sulfur Dioxide	81.48	79.55	76.67	79.23	NA

* Calculated using emission rate, lbs/MMBtu

TABLE 2-3

PCDD/PCDF AMBIENT IMPACT

Maximum Ambient Impact	X/Q[1] ug/sec (------) m3/gm	PCDD/PCDF[2] Emission Rate (gm/sec) PM	Gas	Capacity Utilization Factor	Maximum Ambient Concentration (pg/m3) PM	Gas
5-Year	0.0122	< 5.74E-07	< 4.16E-06	0.80	< 5.60E-03	< 4.06E-02
1-Year	0.0127	< 5.74E-07	< 4.16E-06	0.80	< 5.83E-03	< 4.22E-02
			DEQC Ambient Limits		1.10E+00	2.20E+00

1 - From Permit Application, Volume I; refer to Appendix A.3 for calculations

2 - For Two Boilers

VI. RESIDUE GENERATION

NOTE: You are not required to generate new data. Only provide the data that is readily available to you.

VI.1 Solid residue streams generated:

__X__ Bottom ash __X__ Fly ash __X__ Acid gas control sorbent

____ Other, (specify): _____

VI.2 Are bottom ash and fly ash: ____ Handled separately __X__ Combined

VI.3 If a combined ash stream is generated, please indicate where in the system the ash streams join. Please specify "fly ash" or "bottom ash" for "wet" or "dry" below.

1. Bottom ash discharger __X__
   a. wet ____X____
   b. dry _____
2. Conveyor transfer point ___
   a. wet ____X____
   b. dry _____
3. Ash bunker ___
   a. wet _____
   b. dry _____
4. Transport container ___
   a. wet ____X____
   b. dry _____
5. Mixing device, (specify): _____Agglomerator_____
   a. wet ____X____
   b. dry _____

6. Conveyor belt X

   a. wet X

   b. dry _____

7. Other, (please describe): _____

VI.4 How much liquid residue was generated in 1987? Please specify the units of measurement.

Quench water	0	Scrubber sludge	0
Boiler cleaning waste	0	Other (please specify)	0 (Closed loop system)

VI.5 Please provide the following monthly ash data. Please specify the units of measurement (e.g., tons). If exact figures are not available, please estimate and label as estimates. If fly ash and bottom ash are not generated as separate streams, write "0" on the bottom ash and fly ash lines.

	Bottom	Fly	Combined
Jan '87			
Feb '87			
March '87			
April '87			
May '87			
June '87			
July '87			
Aug '87			
Sept '87	0	0	
Oct '87	0	0	6881
Nov '87	0	0	11904
Dec '87	0	0	12758

VI.6 Has the ash from your facility ever been tested or analyzed?

__X__ Yes _____ No _____ Unknown

VI.7 Does the facility have an established ash sampling and analysis program? __X__ Yes _____ No If no, go to VI.8.

a. If yes, how often are ash samples collected (e.g., daily)?

Fly ash _____

Bottom ash _____

Combined Weekly

b. Where are the ash samples collected (e.g., ESP plenum)?

Fly ash _____

Bottom ash _____

Combined Discharge from ash conveyor to trucks

c. Please specify the compositing method used for ash sampling. If not known, please indicate.

1

d. What time frame does each ash sample represent (e.g., one shift, one day)? 4 hours

e. Who does the sampling (e.g., plant technician, outside consultant)? laborers with supervision

f. Is there a written sampling quality assurance plan?

_____ Yes __X__ No If yes, please attach. If not known, please indicate.

g. What types of ash analysis are conducted?

__X__ EP Toxicity _____ TCLP _____ Distilled water

_____ Dioxins/Furans _____ Organics _____ Leaching

_____ Total elemental (metals) analysis

_____ Other (please specify): _____

Random Sequential Sampling:
Sampling Protocol:

- Each period gather twenty-four 10-minute grab samples with clean shovel taking cross-section of drag flight which has bottom ash/fly ash/scrubber residue materials;
- Place grab samples in clean container;
- Continue sampling every ten minutes for four hours consecutively each period;
- Screen entire sample composite with a 3/8" screen;
- Place < 3/8" materials (usually 50-75% of sample) into clean tygon lined cement mixer;
- Remove > 3/8" noncrushable materials from sample and discard (e.g., wheels, rebar, metal frames, etc.) (usually < 5% of sample [WB]);
- Pass > 3/8" crushable material through hammermill and then recombine crushed materials with other < 3/8" screenings in cement mixer;
- Turn on cement mixer for approximately two minutes to assure thorough mixing of sample composite;
- Manually remove two one pint freezer container size samples from the cement mixer after mixing is completed. (This will yield approximately 2000 grams of sample);
- Label containers as to location, date and Composite #1 and Composite #2. Properly seal and store in safe, cool, clean environment;
- Ship both period composite grab samples to laboratory using the WES Standard Chain-of-Custody forms.
- Sample analysis shall be conducted in accordance with WES specifications as directed by K.E. Forrester.

Keith E. Forrester, PE
Wheelabrator Environmental Systems

013/tjp
Disk 4

SIGNAL ENVIRONMENTAL SYSTEMS
CHAIN OF CUSTODY FORM

LOCATION OF SAMPLING _____

_____

SAMPLE DATE _____ SAMPLE TIME _____

SAMPLE NUMBER _____ SAMPLE TYPE _____

ADDRESS OF SAMPLING LOCATION _____

_____

FIELD INFORMATION _____

_____

_____

SAMPLE COLLECTOR NAME _____

SAMPLE COLLECTOR ADDRESS AND TELEPHONE _____

_____

SHIPPERS'S NAME AND ADDRESS _____

_____

SAMPLE RECEIVER NAME AND ADDRESS _____

_____

CHAIN OF CUSTODY

	NAME PRINTED	SIGNATURE	TITLE	DATE
1.				
2.				
3.				
4.				
5.				
6.				

Field I.D. _____ Date _____ Date Results Needed _____

Extractor (EP TOX Test)

Stirrer/Tumbler _____
Tumbler only _____
Shaker _____

pH Adjustment (For EP TOX Test)

Normal Monitoring
to pH 5 _____
to pH 7 _____
to pH 9 _____

Variations
No Acid Addition _____
Single (400mL) portion _____

Time (For Extraction)

24 hour _____
1 hour _____

Analytes

Drinking Water Metals
Priority Pollutant Metals

Ag	_____	Mn	_____
Al	_____	Na	_____
As	_____	Ni	_____
B	_____	Pb	_____
Ba	_____	Sb	_____
Be	_____	Se	_____
Ca	_____	Sr	_____
Cd	_____	Sn	_____
Co	_____	Tl	_____
Cr	_____	V	_____
Cu	_____	Zn	_____
Fe	_____	Cl	_____
Hg	_____	SO_4	_____
K	_____	Other	_____
Mg	_____	Pesticides	_____
		Herbicides	_____

2. Total Metals Analysis (Digestions)

Ag	_____	Mn	_____
Al	_____	Na	_____
As	_____	Ni	_____
B	_____	Pb	_____
Ba	_____	Sb	_____
Be	_____	Se	_____
Ca	_____	Sr	_____
Cd	_____	Sn	_____
Co	_____	Tl	_____
Cr	_____	V	_____
Cu	_____	Zn	_____
Fe	_____		
Hg	_____		
K	_____		
Mg	_____		

3. Soluble Analytes

On "No pH adjustment EP TOX _____

On Separate Extraction [extract with DI water (10 mL/g)] _____

Ag	_____	Cr	_____	Pb	_____
Al	_____	Cu	_____	Sb	_____
As	_____	Fe	_____	Se	_____
B	_____	Hg	_____	Sr	_____
Ba	_____	K	_____	Sn	_____
Be	_____	Mg	_____	Tl	_____
Ca	_____	Mn	_____	V	_____
Cd	_____	Na	_____	Zn	_____
Co	_____	Ni	_____	Cl	_____
				SO_4	_____

Alkalinity _____ pH _____
COD _____ Specific Conductance _____
Other _____

4. Miscellaneous: Grain Size _____ % Moisture _____

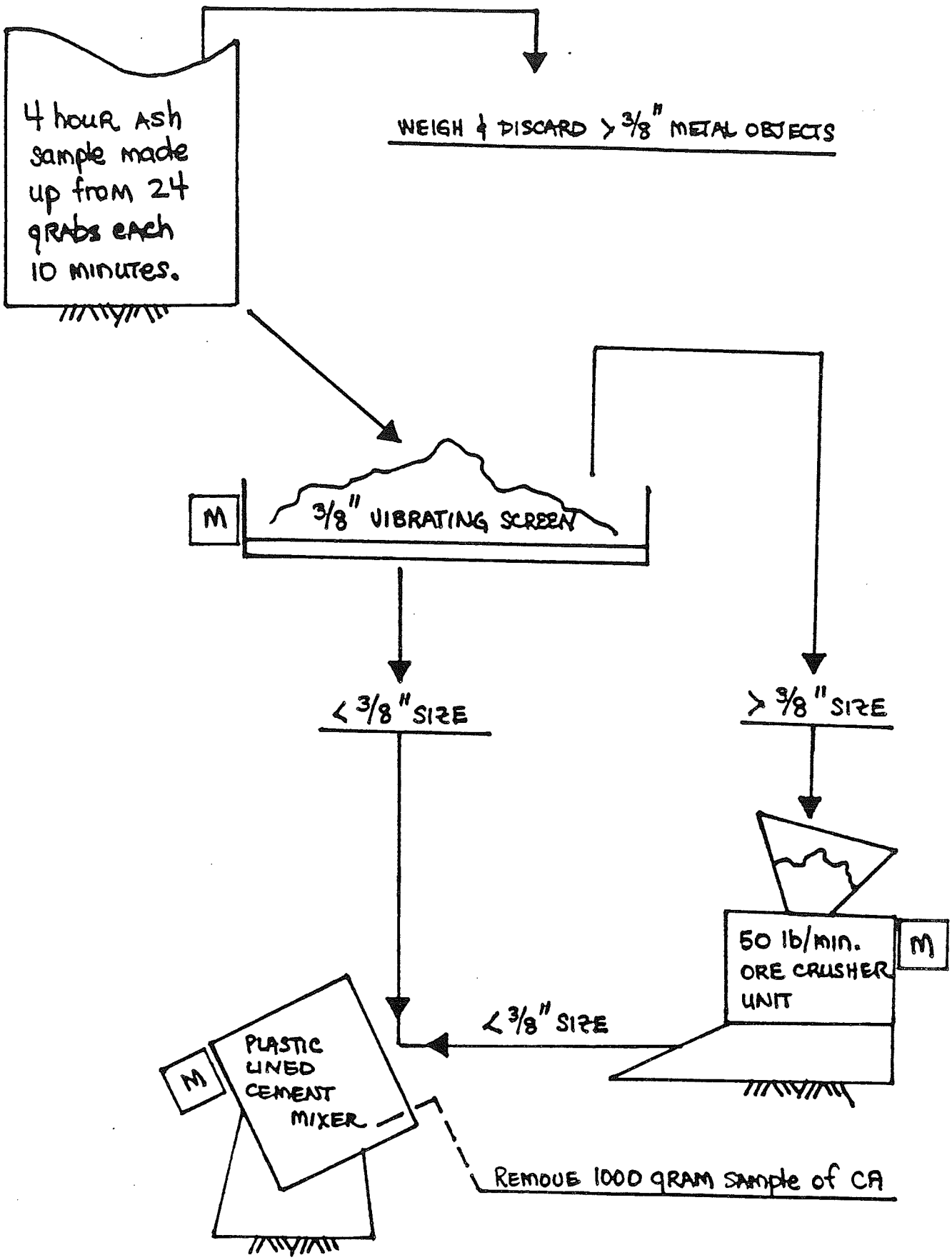
5. Other Analyses: Specify _____

SPECIAL COMMENTS: _____

_____

BILLING INFORMATION: _____

FIGURE 1 : ASH PREPARATION
COMBINED ASH SCHEMATIC



h. Are any analytical tests (e.g., EP Toxicity) done on a regular/routine basis? X Yes _____ No If yes, please provide the following information:

Ash Type	Type of Analysis	Test Frequency
Fly	_____	_____
Bottom	_____	_____
Combined	EP Toxicity	Weekly

VI.8 Please provide the results of all ash chemical analyses (attach copies of lab data sheets if available).

VI.9 Have the liquid wastes from your facility ever been tested or analyzed? _____ Yes X No If yes, which liquids were tested? What types of analyses were performed?

_____

_____

_____

VI.10 What eventually happens to the residue sampling and analysis data?

_____ Submitted to State agency. If so, which agency? _____

Massachusetts Department of Environmental Quality Engineering

_____ Submitted to Federal agency. If so, which agency? _____

_____

_____ Internal use only _____ Published (public domain)

_____ Other (please specify) _____

RAI

COPY

Resource Analysts, Incorporated
Box 4778 Hampton, NH 03842
(603) 926-7777

TO:

Mr. Robert Tekach
Wheelabrator Millbury
331 Southwest Cutoff Road
Millbury, MA 01527

PO # Mill 4/1/88 CA

Date Received: 4/6/88 (1435)

Lab Number: 12,937

Date Reported: 4/25/88

Attached please find test results for EPToxic Metals.

Field Identification: Mill/4/1/88/CA/pH to 5 Matrix: Solid
Laboratory Number: 12,937-1

Parameter	Date Analyzed	Method	Value
Moisture (%)	4/7/88	209F	73

Reference: Standard Methods, 16th Edition

_____ Date _____

h

Technical Director

WES- FMI

SIGNAL ENVIRONMENTAL SYSTEMS
CHAIN OF CUSTODY FORM

LOCATION OF SAMPLING Wheelabrator Millbury Inc
discharge from belt conveyor

SAMPLE DATE 4/1/88 SAMPLE TIME 9:45 to 13:45

SAMPLE NUMBER Mill 4/1/88 CA SAMPLE TYPE CA

ADDRESS OF SAMPLING LOCATION 331 Southwest Cutoff Rd
Millbury MA 01527

FIELD INFORMATION

SAMPLE COLLECTOR NAME Robert Tekach

SAMPLE COLLECTOR ADDRESS AND TELEPHONE 331 Southwest Cutoff Rd
Millbury MA 01527 (617) 791-8900 x 26

SHIPPERS'S NAME AND ADDRESS Same as above

SAMPLE RECEIVER NAME AND ADDRESS RAI Laboratory
1 Lafayette Rd Hampton NH 03842 Attn: John McCarthy

CHAIN OF CUSTODY

	NAME PRINTED	SIGNATURE	TITLE	DATE
1.		× Joseph Rodrigues		4/1/88
2.		Jose Soares		4/1/88
3.	Robert Tekach	Robert Tekach	Env Coord	4/1/88
4.	Donna Stanek	Donna Stanek	Assistant SMO	4-6-88/1435
5.				
6.				

RAI
12,937

Field I.D. M.11 4/1/88 CA Date 4./.88 Date Results Needed 4/15/8.

Extractor (EP TOX Test)

Stirrer/Tumbler X
Tumbler only
Shaker

pH Adjustment (For EP TOX Test)

Normal Monitoring
to pH 5 X
to pH 7
to pH 9

Variations
No Acid Addition X
Single (400mL) portion.

Time (For Extraction)

24 hour X
1 hour

Analytes

Drinking Water Metals
Priority Pollutant Metals

Ag	X	Mn	
Al		Na	
As	X	Ni	
B		Pb	X
Ba	X	Sb	
Be		Se	X
Ca		Sr	
Cd	X	Sn	
Co		Tl	
Cr	X	V	
Cu		Zn	
Fe		Cl	
Hg	X	SO_4	
K		Other	
Mg		Pesticides	
		Herbicides	

2. Total Metals Analysis (Digestions)

Ag		Mn	
Al		Na	
As		Ni	
B		Pb	
Ba		Sb	
Be		Se	
Ca		Sr	
Cd		Sn	
Co		Tl	
Cr		V	
Cu		Zn	
Fe			
Hg			
K			
Mg			

3. Soluble Analytes

On "No pH adjustment EP TOX X

On Separate Extraction [extract with DI water (10 mL/g)]

Ag		Cr		Pb	X
Al		Cu		Sb	
As		Fe		Se	
B		Hg	X	Sr	
Ba		K		Sn	
Be		Mg		Tl	
Ca		Mn		V	
Cd	X	Na		Zn	
Co		Ni		Cl	
				SO_4	

Alkalinity pH
COD Specific Conductance
Other

4. Miscellaneous: Grain Size % Moisture X

5. Other Analyses: Specify

SPECIAL COMMENTS: None

BILLING INFORMATION: Wheelabrator Millbury Inc 331 Southwest Cutoff Rd.
Millbury MA 01527 Attn: Accounts Payable

WFS - FM7

EXTRACTION PROCEDURE TOXICITY

Laboratory Number: 12937-1
Field Identification: Mill/4-1-88/CA/pH to 5
Extraction Date: 04/12/88

1. SAMPLE DESCRIPTION: Non-homogeneous Ash

2. SAMPLE PREPARATION: The sample contained no free liquid, so was not filtered before extraction. 100 g of sample was added to the extractor with 1600 mL water.

Elapsed Time:	Initial pH	0.5N Acetic Acid Added (mL)	Final pH
0 hr 0 min	10.17	200.0	4.84
0 hr 15 min	5.58	50.0	5.08
0 hr 45 min	12.38	50.0	4.92
1 hr 45 min	5.25	50.0	4.83
2 hr 45 min	5.04		
3 hr 45 min	5.14		
4 hr 45 min	5.21	50.0	4.90
5 hr 45 min	4.96		
6 hr 0 min	4.97		
24 hr 0 min	5.00		

Total Acid Added: 400.0 mL

Volume of Water Added to Final Extract: 0 mL

3. ANALYSIS OF EXTRACT:

Analyte	Date Analyzed	Method	Result (mg/L)	Regulatory Limit (mg/L)
Arsenic	04/19/88	7060	<0.08	5.0
Barium	04/15/88	6010	0.1	100.0
Cadmium	04/15/88	6010	0.51	1.0
Chromium	04/15/88	6010	<0.01	5.0
Lead	04/15/88	6010	<0.05	5.0
Mercury	04/13/88	7470	0.13	0.2
Selenium	04/18/88	7740	<0.04	1.0
Silver	04/15/88	6010	<0.01	5.0

All reported values for metals were obtained by the method of standard additions.

MODIFIED EXTRACTION PROCEDURE TOXICITY

Laboratory Number: 12937-2
Field Identification: Mill/4-1-88/CA/No pH Adj.
Extraction Date: 04/12/88

1. SAMPLE DESCRIPTION: Non-homogeneous Ash

2. SAMPLE PREPARATION: The sample contained no free liquid, so was not filtered before extraction. 100 g of sample was added to the extractor with 1600 mL water.

Elapsed Time:	pH
0 hr 0 min	10.14
0 hr 24 min	9.95

Total Acid Added: 0.0 mL

Volume of Water Added to Final Extract: 400 mL

3. ANALYSIS OF EXTRACT:

Analyte	Date Analyzed	Method	Result (mg/L)
Cadmium	04/15/88	6010	<0.005
Lead	04/15/88	6010	<0.05
Mercury	04/13/88	7470	0.0004

All reported values for metals were obtained by the method of standard additions.

RAI

COPY

Resource Analysts, Incorporated
Box 4778 Hampton, NH 03842
(603) 926-7777

TO:

Mr. Robert Tekach
Wheelabrator-Millbury Inc.
331 Southwest Cut-off Road
Millbury, MA 01527

PO # Mill-3-25-88/CA

Date Received: 4/4/88 (1135)

Lab Number: 12,908

Date Reported: 4/18/88

Attached please find test results for Extraction Procedure Toxicity.

Field Identification: Mill 3-25-88/CA (pH to 5) Matrix: Solid
Laboratory Number: 12,908-1

Parameter	Date Analyzed	Method/Reference	Concentration
Moisture (%)	4/07/88	209F/1	74

Reference: 1) Standard Methods, 16th Edition

_____ Date _____

Technical Director

WES- FMI

COPY

SIGNAL ENVIRONMENTAL SYSTEMS
CHAIN OF CUSTODY FORM

LOCATION OF SAMPLING Wheelabrator Millbury Inc
discharge from belt conveyor

SAMPLE DATE 3/25/88 SAMPLE TIME 11:00 – 15:00

SAMPLE NUMBER Mill 3/25/88 CA SAMPLE TYPE CA

ADDRESS OF SAMPLING LOCATION 331 Southwest Cutoff Rd.
Millbury MA 01527

FIELD INFORMATION

RAI
12,908

SAMPLE COLLECTOR NAME Robert Tekach

SAMPLE COLLECTOR ADDRESS AND TELEPHONE 331 Southwest Cutoff Rd.
Millbury MA 01527 (617) 791-8900

SHIPPERS'S NAME AND ADDRESS Same as above

SAMPLE RECEIVER NAME AND ADDRESS John McCarthy RAI Laboratory
1 Lafayette Rd. Hampton NH 03842

CHAIN OF CUSTODY

	NAME PRINTED	SIGNATURE	TITLE	DATE
1.		Jose M Rodrigues		3/25/88
2.		Jose Lowry		3/25/88
3.	Robert Tekach	Robert Tekach	Env. Coord.	3/25/88
4.	Donna Starek	Donna Starek	Assistant SMO	4-4-88 / 1135
5.				
6.				

Field I.D. M.11 3/25/88 CA Date 3/25/88 Date Results Needed 4/11/88

Extractor (EP TOX Test)

Stirrer/Tumbler X
Tumbler only
Shaker

pH Adjustment (For EP TOX Test)

Normal Monitoring
to pH 5 X
to pH 7
to pH 9

Variations
No Acid Addition X
Single (400mL) portion

Time (For Extraction)

24 hour X
1 hour

Analytes

Drinking Water Metals
Priority Pollutant Metals

Ag	X	Mn	
Al		Na	
As	X	Ni	
B		Pb	X
Ba	X	Sb	
Be		Se	X
Ca		Sr	
Cd	X	Sn	
Co		Tl	
Cr	X	V	
Cu		Zn	
Fe		Cl	
Hg	X	SO_4	
K		Other	
Mg		Pesticides	
		Herbicides	

2. Total Metals Analysis (Digestions)

Ag		Mn	
Al		Na	
As		Ni	
B		Pb	
Ba		Sb	
Be		Se	
Ca		Sr	
Cd		Sn	
Co		Tl	
Cr		V	
Cu		Zn	
Fe			
Hg			
K			
Mg			

3. Soluble Analytes

On "No pH adjustment EP TOX

On Separate Extraction [extract with DI water (10 mL/g)]

Ag		Cr		Pb	X
Al		Cu		Sb	
As		Fe		Se	
B		Hg	X	Sr	
Ba		K		Sn	
Be		Mg		Tl	
Ca		Mn		V	
Cd	X	Na		Zn	
Co		Ni		Cl	
				SO_4	

Alkalinity pH
COD Specific Conductance
Other

4. Miscellaneous: Grain Size % Moisture X

5. Other Analyses: Specify

SPECIAL COMMENTS: None

Rai 12,908

BILLING INFORMATION: Wheelabrator Millbury Inc 331 Southwest Cutoff Rd
Millbury, MA 01527 Accounts Payable

WEC - M2

EXTRACTION PROCEDURE TOXICITY

Laboratory Number: 12,908-1
Field Identification: Mill 3-25-88/Ca (pH to 5)
Extraction Date: 04/06/88

1. SAMPLE DESCRIPTION: Non-homogenous Ash

2. SAMPLE PREPARATION: The sample contained no free liquid, so was not filtered before extraction. 100 g of sample was added to the extractor with 1600 mL water.

Elapsed Time:	Initial pH	0.5N Acetic Acid Added (mL)	Final pH
0 hr 0 min	12.51	400.0	4.97
1 hr 0 min	5.18		
2 hr 0 min	5.65		
3 hr 0 min	5.81		
4 hr 0 min	5.83		
5 hr 0 min	5.84		
6 hr 0 min	5.89		
24 hr 0 min	6.00		

Total Acid Added: 400 mL

Volume of Water Added to Final Extract: 0 mL

3. ANALYSIS OF EXTRACT:

Analyte	Date Analyzed	Method	Result (mg/L)	Regulatory Limit (mg/L)
Arsenic	04/11/88	7060	0.05	5.0
Barium	04/07/88	6010	0.3	100.0
Cadmium	04/07/88	6010	0.23	1.0
Chromium	04/07/88	6010	<0.01	5.0
Lead	04/07/88	6010	<0.05	5.0
Mercury	04/08/88	7470	0.20	0.2
Selenium	04/12/88	7740	<0.01	1.0
Silver	04/07/88	6010	<0.02	5.0

All reported values for metals were obtained by the method of standard additions.

EXTRACTION PROCEDURE TOXICITY

Laboratory Number: 12.908-2
Field Identification: Mill 3-25-88/Ca (no pH adj)
Extraction Date: 04/06/88

1. SAMPLE DESCRIPTION: Non-homogenous Ash

2. SAMPLE PREPARATION: The sample contained no free liquid, so was not filtered before extraction. 100 g of sample was added to the extractor with 1600 mL water.

Elapsed Time:	Initial pH	0.5N Acetic Acid Added (mL)	Final pH
0 hr 0 min	12.54		
24 hr 0 min	12.49		

Total Acid Added: 0.0 mL

Volume of Water Added to Final Extract: 400 mL

3. ANALYSIS OF EXTRACT:

Analyte	Date Analyzed	Method	Result (mg/L)	Regulatory Limit (mg/L)
Cadmium	04/07/88	6010	0.006	1.0
Mercury	04/08/88	7470	<0.0003	0.2
Lead	04/07/88	6010	2.8	5.0

All reported values for metals were obtained by the method of standard additions.

RAI

COPY

Resource Analysts, Inc.
P.O. Box 778
1 Lafayette Road
Hampton, N.H. 03842
(603) 926-7777

TO:

Mr. Bob Tekach
Wheelabrator Millbury
331 Southwest Cutoff Road
Millbury, MA 01527

PO # MILL 3/18/88 CA

Date Received: 3/23/88 (1100

Lab Number: 12,799

Date Reported: 4/07/88

Attached please find test results for Extraction Procedure Toxicity.

Field Identification: Mill 3/18/88 CA pH5 Matrix: Solid
Laboratory Number: 12,798-1

Parameter	Date Analyzed	Method/Reference	Concentration
Moisture (%)	3/29/88	209F/1	24

Reference: 1) Standard Methods, 16th Edition

Date _____

1

Technical Director

WES- HMI

COPY

SIGNAL ENVIRONMENTAL SYSTEMS
CHAIN OF CUSTODY FORM

LOCATION OF SAMPLING Wheelabrator Millbury Inc
discharge from belt conveyor

SAMPLE DATE 3/18/88 SAMPLE TIME 8:30 - 12:30

SAMPLE NUMBER Mill 3/18/88 CA SAMPLE TYPE CA

ADDRESS OF SAMPLING LOCATION 331 Southwest Cutoff Rd.
Millbury MA 01527

FIELD INFORMATION

SAMPLE COLLECTOR NAME Bob Tekach

SAMPLE COLLECTOR ADDRESS AND TELEPHONE 331 Southwest Cutoff Rd
Millbury MA 01527 (617) 791-8500 x26

SHIPPERS'S NAME AND ADDRESS Same as above.

SAMPLE RECEIVER NAME AND ADDRESS RAJ Laboratory 1 Lafayette Rd
Hampton NH 03842

CHAIN OF CUSTODY

	NAME PRINTED	SIGNATURE	TITLE	DATE
1.		Jose Gomez		
2.		Jose Rodrigues		
3.	Robert Tekach	Robert Tekach	Env. Coor.	3/18/88
4.	Bob O'Brien	Bob O'Brien	Smo Mgr	3/18/88
5.				
6.				

F d I.D. Mill 3/18/88 CA Date 3/18 Date Results Needed 4/1/88

Extractor (EP TOX Test)

Stirrer/Tumbler X
Tumbler only
Shaker

pH Adjustment (For EP TOX Test)

Normal Monitoring
to pH 5 X
to pH 7
to pH 9

Variations
No Acid Addition X
Single (400mL) portion.

Time (For Extraction)

24 hour X
1 hour

Analytes

Drinking Water Metals
Priority Pollutant Metals

Ag	X	Mn	
Al		Na	
As	X	Ni	
B		Pb	X
Ba	X	Sb	
Be		Se	X
Ca		Sr	
Cd	X	Sn	
Co		Tl	
Cr	X	V	
Cu		Zn	
Fe		Cl	
Hg	X	SO_4	
K		Other	
Mg		Pesticides	
		Herbicides	

2. Total Metals Analysis (Digestions)

Ag		Mn	
Al		Na	
As		Ni	
B		Pb	
Ba		Sb	
Be		Se	
Ca		Sr	
Cd		Sn	
Co		Tl	
Cr		V	
Cu		Zn	
Fe			
Hg			
K			
Mg			

3. Soluble Analytes

On "No pH adjustment EP TOX X

On Separate Extraction [extract with DI water (10 mL/g)]

Ag		Cr		Pb	X
Al		Cu		Sb	
As		Fe		Se	
B		Hg	X	Sr	
Ba		K		Sn	
Be		Mg		Tl	
Ca		Mn		V	
Cd	X	Na		Zn	
Co		Ni		Cl	
				SO_4	

Alkalinity pH
COD Specific Conductance
Other

4. Miscellaneous: Grain Size % Moisture X

5. Other Analyses: Specify

SPECIAL COMMENTS: None

BILLING INFORMATION: wheelabrator Millbury Inc 331 Southwest Cutoff Rd
Millbury, MA 01527 Attn Accounts Payable

WES-FM2

EXTRACTION PROCEDURE TOXICITY

Laboratory Number: 12,799-1
Field Identification: Mill 3/18/88 CA pH 5
Extraction Date: 03/24/88

1. SAMPLE DESCRIPTION: Non-homogenous ash

2. SAMPLE PREPARATION: The sample contained no free liquid, so was not filtered before extraction. 100 g of sample was added to the extractor with 1600 mL water.

Elapsed Time:	Initial pH	0.5N Acetic Acid Added (mL)	Final pH
0 hr 0 min	12.35	400.0	5.18
1 hr 0 min	5.99	0.0	
2 hr 0 min	6.92	0.0	
3 hr 0 min	7.71	0.0	
4 hr 0 min	7.50	0.0	
5 hr 0 min	7.64	0.0	
6 hr 0 min	7.71	0.0	
24 hr 0 min	8.41	0.0	

Total Acid Added: 400.0 mL

Volume of Water Added to Final Extract: 0 mL

3. ANALYSIS OF EXTRACT:

Analyte	Date Analyzed	Method	Result (mg/L)	Regulatory Limit (mg/L)
Arsenic	04/01/88	7060	<0.01	5.0
Barium	03/25/88	6010	0.62	100.0
Cadmium	03/25/88	6010	0.13	1.0
Chromium	03/25/88	6010	<0.01	5.0
Lead	03/25/88	6010	<0.05	5.0
Mercury	03/28/88	7470	0.023	0.2
Selenium	04/05/88	7740	<0.04	1.0
Silver	03/25/88	6010	<0.02	5.0

All reported values for metals were obtained by the method of standard additions.

COPY

MODIFIED EXTRACTION PROCEDURE TOXICITY

Laboratory Number: 12,799-2
Field Identification: Mill 3/18/88 CA No pH Adj.
Extraction Date: 03/24/88

1. SAMPLE DESCRIPTION: Non-homogenous ash

2. SAMPLE PREPARATION: The sample contained no free liquid, so was not filtered before extraction. 100 g of sample was added to the extractor with 1600 mL water.

Elapsed Time:	Initial pH	0.5N Acetic Acid Added (mL)	Final pH
0 hr 0 min	12.26	0.0	
24 hr 0 min	12.27	0.0	
	Total Acid Added:	0.0 mL	

Volume of Water Added to Final Extract: 400 mL

3. ANALYSIS OF EXTRACT:

Analyte	Date Analyzed	Method	Result (mg/L)	Regulatory Limit (mg/L)
Cadmium	03/25/88	6010	<0.005	1.0
Lead	03/25/88	6010	2.9	5.0
Mercury	03/28/88	7470	<0.0003	0.2

All reported values for metals were obtained by the method of standard additions.

VII. RESIDUE HANDLING AND DISPOSAL

NOTE: You are not required to generate new data. Only supply the data that is readily available to you.

VII.1 Describe in detail the facility systems for collection and transfer of ash at your facility. Please indicate the types of ash handled by each component. Attach a schematic if available.

Burnout from grates, generator ash, economizer ash are deposited into wet ram deashers. It is then discharged to a vibrating conveyor and mixed with flyash on a belt conveyor to be loaded in trucks. SDA and ESP is transported via drag covenyors to agglomerator and then mixed with the bottom ash on the belt conveyor.

VII.2 Is ash stored on-site prior to disposal? _____ Yes X No

a. If yes: What types of ash are stored?
_____ Combined _____ Fly ash _____ Bottom ash

What is the capacity of the storage area? _____

What is the average quantity of ash in storage? _____

VII.3 Describe any and all containment measures in the ash handling/ storage areas for the following:

a. Runoff (i.e., any type of surface water drainage or discharge from the ash handling and storage areas)

b. Fugitive dust emissions: _____

VII.4 How is the ash transported to the disposal site (e.g., truck or trains)? _____

Truck with roll off bins (w/covers)

VII.5 How many miles is the disposal site from your facility? 5

VII.6 What precautions are taken to minimize fugitive dust emission during transport activities? Ash bins have water tight doors. Bins are covered with a canvas tarp before transport.

VII.7 Is the ash from your facility treated prior to its disposal?

_____ Yes X No (Ongoing research programs to evaluate treatment system)

(Treatment is defined as the addition of chemical substances or processes that affect the physical and/or chemical nature of the ash.)

If yes: What type of treatment is used (e.g., neutralization, stabilization)? (Research includes immobilization)

What types of ash are treated? _____

Describe the actual treatment process: Research at this time principally uses a WES patented immobilization additive.

VII.8 Describe any treatment methods used for the liquids or sludges at your facility prior to their disposal. Identify the liquid type. Please include a description of quench water fate.

No sludges. pH of liquids is adjusted.

VII.9 Where is the ash generated at your facility taken for disposal?

_____ Municipal solid waste (i.e., sanitary) landfill

_____ Industrial solid waste landfill

_____ On-site ash landfill ('monofill')

__X__ Off-site ash landfill ('monofill')

_____ Surface impoundment (_____ On-site _____ Off-site)

_____ Stockpiles (_____ On-site _____ Off-site)

_____ Other (please describe) _____

VII.10 Describe any recycling or reuse of the ash that occurs in lieu of or in addition to land disposal (e.g., used as aggregate in asphalt paving or as landfill cover material). _____

None

VII.11 What is the percentage of the total ash produced that is recycled or reused? _____

None

VII.12 Where are the liquids and/or sludges disposed of? None

VII.13 To the maximum extent possible, please provide the following specifications data for each land disposal site that has accepted ash from your facility: (Make additional copies as necessary).

a. Location: Shrewsbury Landfill, Shrewsbury, Massachusetts

b. Name and phone number of facility contact: WES Millbury Plant

Bob Tekach (617) 791-8900

If you do not have the requested detailed information, please provide answers to "a" and "b" above. We are not requesting that you provide information which is currently not in your possession.

How long have you been sending your ash to this facility? _____

Since September 17, 1987

Other wastes disposed of at site (if known): _____

Dimensions: Overall 58 acres

Active cell 11 acres

How long has the active cell been receiving ash and other wastes?

Ash only since September 17, 1987

Is the ash mixed with the trash or placed in segregated portion of the site? (please describe). _____

Ash is monofilled

What types of protective devices are used at the site:

_____ Liner (____ Clay ____ Synthetic __X__ Composite)

_____ Leachate collection system (please describe leachate collection system)

__X__ Run-on and run-off controls (i.e., berms, levees, graded slopes) (please indicate what types).

berms and graded slopes

__X__ Daily and final cover (please describe what types of cover materials are used)

Common earth - daily 10^{-7} perm day - final

__X__ Dust control (please describe).

Daily cover

What types of environmental monitoring systems are in use?

__X__ Ground water monitoring wells

_____ Air monitoring

Are there any expansion plans for the land disposal site currently being utilized? __X__ Yes _____ No

If yes, can you provide any design specs similar to the items requested above?

VII.14 Please provide any available environmental monitoring data from the land disposal site for the following media (attach lab data sheets, tables or other documentation as necessary):

Ground water

Surface water

Leachate (if site has leachate collection system)

Air

REITZEL ASSOCIATES
Consulting Engineers Waste & Water Analysis
10 Kendall Place, Boylston, Massachusetts 01505 U.S.A.
Phone (617) 869-2893
Nicolas M. Reitzel, R.P.E. - Mass. No. 19701

Name WHEELABRATOR - MILLBURY
Address 333 SOUTHWEST CUTOFF
(P.O. Box 740) MILLBURY, MA. 01527

R.A. Invoice No. 9389
Sample Date & Time 12-1-97 PM
Sampler N. REITZEL
Sample Receipt 12-1-97 445 PM

SHREWSBURY LANDFILL
MAIN PUMPING STATION - PUMPING TO MUNICIPAL SEWER SYSTEM - SAMPLED @ PUMP CHAMBER.

TEST RESULTS

	Units					
pH	S.U.	8.13				
SPECIFIC CONDUCTANCE	umhos/cm	5,000				
TOTAL DISSOLVED SOLIDS	MG/L	3780				
TOTAL SUSPENDED SOLIDS	MG/L	743				
TURBIDITY	N.T.U.	2000				
C.O.D.	MG/L	331				
BOD5	"	114				
CADMIUM	"	0.008				
CHROMIUM	"	<0.016				
COPPER	"	0.061				
LEAD	"	<0.011				
MERCURY	"	0.045				
NICKEL	"	0.089				
SILVER	"	<0.008				

Richard Barlow

REITZEL ASSOCIATES
Consulting Engineers Waste & Water Analysis
10 Kendall Place, Boylston, Massachusetts 01505 U.S.A.
Phone (617) 869-2893
Nicolas M. Reitzel, R.P.E. - Mass. No. 19701

Name WHEELABRATOR-MILLBURY
Address

R.A. Invoice No. 9389
Sample Date & Time 12/1/87
Sampler
Sample Receipt

LANDFILL LEACHATE TO SEWER

TEST RESULTS

	Units					
ZINC	MG/L	0.198				
BORON	"	0.109				
MOLYBDENUM	"	<0.03				
BERYLLIUM	"	<0.002				
METHOD 608 PCB's	MGM/L	NONE (1) DETECTED				

NOTES—
1) SEE ATTACHED SUBCONTRACTOR'S REPORT FOR METHODS & DETECTION LIMIT.

2) THIS SAMPLE WAS COLLECTED FROM PUMP CHAMBER PUMPING TO FORCE MAIN.

VIII. REVENUES, COSTS, AND OTHER ECONOMIC INFORMATION

NOTE: You are not required to generate new data. Only supply the data that is readily available to you.

This information will be used by EPA to assess the economic impact of possible new environmental regulations on MWC facilities.

What type of information is needed?

The questionnaire requests the following data from the MWC facility that you own or operate.

- o Capital and operating cost data.
- o Data on revenues derived from the sale of facility services or payments provided to support continued provision of waste disposal services.
- o Information on financing and contractual arrangements covering waste combustion and by-products.

If you have more than one combustor unit at your facility, make additional blank copies of Part VIII to be filled out for each unit. However, fill out only one copy of Part VIII if the facility has combustors that are of the same type and operated for all intents and purposes as a single unit. For example, if two modular combustors with energy recovery capability share a waste stream and emission control systems, treat them as a single unit.

Who should answer the questions?

This information request has been sent to plant managers. However, some of the questions on economics or finance may be inappropriate for plant managers or operating personnel to answer. If that is the case, please direct such questions to the appropriate financial or budgetary staff.

How should I use the Notes and Comments page at the end of Part VIII?

If there are special circumstances for your facility that affect a particular question or your interpretation of a particular question, please bring these to our attention by using the Notes and Comments page at the end of Part VIII.

VIII.1 What number was assigned to this combustor unit in Question III.1?

Unit Number: _____

COSTS

Question VIII.2 through VIII.10 concern costs related to the planning, installation, operation, and anticipated decommissioning of each of the units. Organizations frequently have different ways of allocating costs and keeping cost records. Try to match your account categories to the typical

cost categories given for each question. Note substantive differences in the margin next to our cost categories. If one of your account categories does not appear in the question, indicate the value of that category under "other" costs.

VIII.2 What was the initial investment in this unit?

(Initial investment includes the initial expenditures required to begin unit operation, in the areas of planning, engineering and design, equipment purchase and installation, testing, interest payments during construction, and worker training for each combustor unit as of the date that operation began. Any investments that occurred after the unit became operational are considered subsequent investments, and should be noted in Question VIII.3)

Category	Cost ($1000)	Accuracy (circle)	Investment Period (month/year)
a. Planning and management (including staffing and training, applications and approval)	_____	actual or estimate	__/__ to __/__
b. Site acquisition	_____	actual or estimate	__/__ to __/__
c. Detailed design and engineering	_____	actual or estimate	__/__ to __/__
d. Equipment purchase, installation and testing			
1. Combustor equipment	_____	actual or estimate	__/__ to __/__
2. Air pollution control equipment	_____	actual or estimate	__/__ to __/__
3. Balance of plant	_____	actual or estimate	__/__ to __/__
e. Interest payments during construction	_____	actual or estimate	__/__ to __/__
f. Other initial investment costs (specify)			
_____	_____	actual or estimate	__/__ to __/__
_____	_____	actual or estimate	__/__ to __/__
g. Total investment	$180,000		

VIII.3 What subsequent investments have been made to this unit?

(Subsequent investments include the expenditures required to upgrade unit operation, in the areas of planning, engineering and design, equipment purchase and installation, testing, and interest payments for construction of modifications. Any expenditures that occurred before the unit became operational are considered initial investments, and should be noted in Question VIII.2)

Category		Cost ($1000)	Accuracy (circle)	Investment Period (month/year)
a. Improvements to combustor (describe each modification on the back of this page)	i.	_____	actual or estimate	__/__ to __/__
	ii.	_____	actual or estimate	__/__ to __/__
	iii.	_____	actual or estimate	__/__ to __/__
b. Improvements to air pollution control equipment (describe each modification on the back of this page)	i.	_____	actual or estimate	__/__ to __/__
	ii.	_____	actual or estimate	__/__ to __/__
	iii.	_____	actual or estimate	__/__ to __/__
c. Improvements to by-product production (recycled materials, steam, electricity, etc.) (describe each modification on the back of this page)	i.	_____	actual or estimate	__/__ to __/__
	ii.	_____	actual or estimate	__/__ to __/__
	iii.	_____	actual or estimate	__/__ to __/__
d. Improvements to balance of plant (describe each modification on the back of this page)	i.	_____	actual or estimate	__/__ to __/__
	ii.	_____	actual or estimate	__/__ to __/__
	iii.	_____	actual or estimate	__/__ to __/__
e. Total subsequent investment		_____	actual or estimate	__/__ to __/__

VIII.4 Approximately what year do you expect this unit to be decommissioned?

Expected year of decommissioning: _____

VIII.5 What is the expected cost of decommissioning, less any site and salvage value?

Expected cost of decommissioning: _____

VIII.6 What periodic investments, occurring in multiyear intervals, and including equipment replacement, do you expect the unit to need in the future?

Category	Cost ($1000)	Accuracy (circle)	Investment Frequency (No. of years)
a. Refuse handling	_____	actual or estimate	_____
b. Combustor	_____	actual or estimate	_____
c. Air pollution control equipment	_____	actual or estimate	_____
d. Energy production	_____	actual or estimate	_____
g. Other (specify)			
_____	_____	actual or estimate	_____
_____	_____	actual or estimate	_____

VIII.7 What are the ownership and operation arrangements for this unit? (More than one YES answer may be checked for joint public and private ownership or operation)

a. Publicly owned ____ Yes __X__ No

b. Publicly operated ____ Yes __X__ No

c. Privately owned __X__ Yes ____ No

d. Privately operated __X__ Yes ____ No

VIII.8 What are the current annual operating costs of this unit? (Include costs that occur during the course of each year. If some of these costs cover more than one unit, estimate the proportion of these costs that apply to this particular unit.)

Category	Cost Per Year ($1000)	Accuracy (circle)
a. Operating and maintenance materials and labor. Include utilities, supplemental fuel, and labor costs fully loaded with benefits, unemployment insurance, etc.		
i. Combustor	_____	actual or estimate
ii. Air pollution control equipment	_____	actual or estimate
iii. Balance of plant	_____	actual or estimate
e. Residue disposal services	_____	actual or estimate
f. Insurance	_____	actual or estimate
g. Administration and management	_____	actual or estimate
h. Taxes (including licenses and permit fees)	_____	actual or estimate
i. Debt service	_____	actual or estimate
j. Other (specify)		
_____	_____	actual or estimate
k. Total annual operating costs	_____	actual or estimate

VIII.9 What would be the cost if, in order to install pollution control equipment, one of the following situations occurred? (In this question, cost refers to any lost revenues, penalties, fixed costs or other payments which have to be made.)

Category	Cost ($1000)	Accuracy (circle)
a. Operate half time for 3 mos.	8,700	actual or (estimate)
b. Cease operating for 1 mo.	5,800	actual or (estimate)
c. Cease operating for 3 mos.	17,400	actual or (estimate)
d. Cease operating for 6 mos.	34,800	actual or (estimate)

VIII.10 How many employees are engaged in the operation of this incineration facility? (Report the number of full-time employees; if two individuals each work half-time, count them as one full-time employee. If an employee's time is spread across more than one category below, report the fraction of time worked in each category so that the fractions add up to 1 if full time, .5 if half time, etc.)

Category	Number of Employees
a. Management	5
b. Administrative	3
c. Clerical	2
d. Planning	-
e. Operations	48
f. Other	-

REVENUES

Answers to Questions VIII.11 and VIII.12 will be used to estimate the economic impact of municipal waste combustion facilities on different sectors of the economy. These questions concern all revenues derived from operating subsidies and the sale of refuse disposal services, recycled materials, steam, and electricity. Organizations frequently have different ways of allocating revenues and keeping revenue records. Try to match your account categories to the typical revenue categories given for each question. Note substantive differences in the margin next to our revenue categories. If one of your account categories does not appear in the question, indicate the value under "other revenues."

VIII.11 What are the current annual operating revenues of this unit?

Category	Revenues per year ($1000)	Accuracy (circle)	Amount Sold (specify units)
a. Sale of refuse disposal services	_____	actual or estimate	_____ 100 tons or 100 ft^3
b. Sale of recycled materials	_____	actual or estimate	_____ 100 tons or 100 ft^3
c. Sale of steam	_____	actual or estimate	_____ million Btu
d. Sale of electricity	_____	actual or estimate	_____ thousand kWh
e. Other revenues (specify sources)	_____	actual or estimate	
Sources: _____			
f. Operating subsidies (specify form and sources)	_____	actual or estimate	

Subsidy form and sources: _____

_____

_____

VIII.12 What is currently charged by this unit for waste disposal services? (If a published tipping or fee schedule for waste disposal at your facility is available, please attach it to this questionnaire.)

Category	Price (dollars/unit of measure)	Units of Measure: tons	Units of Measure: cubic feet
a. Preferred municipal solid waste (MSW) under contract	$0 Host Community $25.33 (Signed 1985) $47.88 (Signed 1988)	X	
b. Other MSW under contract	$57.64 (Signed 1987) $58.52 (Signed 1987)	X	
c. Noncontract MSW	$70.00	X	
d. Noncontract commercial and industrial waste	$70.00	X	

FINANCE AND CONTRACTS

Questions VIII.13 through VIII.15 concern the amount and method used to finance the MSW combustion unit and the contractual provisions which cover the unit's operation. These questions help provide a basis for determining how financial and contractual arrangements may affect, and be affected by, environmental regulations.

What if I operate more than one unit covered by the same financial or contractual arrangements?

Answer this section once and reference these answers in the questionnaire covering the other units.

VIII.13 How is the financing of this unit structured? If sale and lease-back provisions were used to finance this facility, this question refers to financing as structured by the current owner.

Category	Initial Amount	Average Debt Term
a. Taxable bonds	$ 120,000M	20 years
b. Tax-exempt bonds	$ 325M	10 years
c. Private equity	$ 60,000M	
d. Public capital improvement funds	$ -	
e. Grants or transfers	$ -	
f. Other (specify)	$ -	

VIII.14 Contracts often contain specific provisions for pricing and delivery of waste disposal services. Do the contracts covering operation of this unit contain important provisions specifying:

a. An index used to price future combustion services?	X Yes	No
b. Minimum delivery required of waste producers?	X Yes	No
c. Maximum delivery accepted from waste producers?	X Yes	No
d. Minimum waste accepted by combustor operator?	X Yes	No
e. Restrictions on the composition of waste delivered?	X Yes	No
f. Terms of the contract?	X Yes	No
g. Disposal of ash?	Yes	X No
h. Disposal of non-combusted feed waste?	Yes	X No

VIII.15 What are the provisions covering sale of by-products of municipal waste combustion? (Check YES or NO for each provision.)

Category	Spot Market YES	Spot Market NO	Take or Pay YES	Take or Pay NO	Contracted Minimum Amount YES	Contracted Minimum Amount NO	Contracted Maximum Amount YES	Contracted Maximum Amount NO
a. Recycled material	X			X		X		X
b. Electricity		X	X			X		X
c. Steam	N/A							

VIII.16 Provide the name, mailing address, and telephone number of the individual who answered, or coordinated the answers, to questions in Part VIII if different from coordinator identified in Section I.

a. Name:

David Wojichowski

b. Address:

55 Ferncroft Road

Danvers, MA 01923

c. Telephone number:

(617) 791-8900

PART VIII.17 NOTES AND COMMENTS

IX. SUGGESTIONS FOR FUTURE QUESTIONNAIRES

NOTE: To make regulatory decisions based on the best available data and science, the EPA frequently relies on the use of questionnaires to collect information. In an effort to improve future questionnaires in terms of clarity of instructions and ease of completion, please answer the questions below and provide additional comments or suggestions you may have towards improving future questionnaires.

IX.1 Were the instructions to this questionnaire clear? ____ Yes ____ No If no, which instructions were the most confusing?

_____

_____

IX.2 Was the questionnaire adequately targeted for the level of understanding of the respondent? ____ Yes ____ No

IX.3 Was the organization of the questionnaire logical? ____ Yes ____ No If no, can you suggest a more logical format?

_____

_____

_____

IX.4 Did the format of the questionnaire leave adequate space for the responses? ____ Yes ____ No

IX.5 We used several different designs for the questions. Did we design the questions in an appropriate style for the intended responses? (i.e., essay or descriptive vs. multiple choice) ____ Yes ____ No

IX.6 Can you offer any further suggestions for improving this questionnaire? ____ Yes ____ No If yes, please describe your suggestions. _____

_____

_____

_____

_____

_____

_____